





Presented to  
The Library  
of the  
University of Toronto

by  
William Lash Miller, B.A. Ph.D.,  
C.B.E.  
Professor Emeritus  
of Physical  
Chemistry

HANDBOUND  
AT THE



UNIVERSITY OF  
TORONTO PRESS











3573  
1

A COLLECTIVE INDEX  
OF THE  
TRANSACTIONS AND ABSTRACTS  
OF  
THE CHEMICAL SOCIETY

1873—1882

COMPILED  
BY  
MARGARET D. DOUGAL

LONDON: GURNEY AND JACKSON  
(*Successors to J. van Voorst*)  
1 PATERNOSTER ROW

RICHARD CLAY & SONS, LIMITED.  
LONDON & BUNGAY.



~~P~~  
~~Chem & Phys~~  
~~C~~

A COLLECTIVE INDEX

OF THE

TRANSACTIONS AND ABSTRACTS

OF

THE CHEMICAL SOCIETY

1873—1882

---

PART I—INDEX OF AUTHORS

---

COMPILED

BY

MARGARET D. DOUGAL

360566  
24. 1. 39.

LONDON: GURNEY AND JACKSON

(Successors to J. van Voorst)

1, PATERNOSTER ROW

QD  
1  
C6  
Index  
1873-82  
cop.3

RICHARD CLAY & SONS, LIMITED,  
LONDON & BUNGAY.

## PREFACE.

THIS Index has been compiled under the direction of a Committee appointed by the Council of the Chemical Society, consisting of the Treasurer (Chairman), the Secretaries, the Editors, Dr. Forster Morley, Mr. J. W. Rodger, and Dr. Palmer Wynne. The actual execution of the work was entrusted to Mrs. Dougal, who has been assisted at various times by Mrs. Guthrie, Miss Green, Miss Morfee, Miss Sharpe, and Mr. D. A. Gracey.

The Committee are indebted for assistance, and for advice as to the arrangement of special subject matter, to Dr. Horace T. Brown, Professor Percy Frankland, Mr. A. G. Green, Professor Tilden, and Dr. Walker.

The work is divided into two main parts: (1) an Index of Authors arranged alphabetically, with the titles of their respective papers in chronological order; and (2) an Index of Subjects.

The general arrangement of each part is self-evident, and calls therefore for very little explanation. With a view to the more certain identification of authors care has been taken to give their names in full whenever possible. In some instances, however, even the full name has not sufficed, and it has been necessary, as a means of further identification, to add the name of the town or place with which the author is connected. Thus we have Hermann Müller of Fraureuth, Hermann Müller of Hersfeld, and Hermann Müller of Thurgau; Max Müller of Bonn and Max Müller of Brunswick; Ernst Schulze of Bonn and Ernst Schulze of Zürich. In the case of Russian authors, whose papers for the most part reach the Society's publications through German sources, the advice of Professor Menshutkin and Dr. Lewkowitsch has been followed in employing the German system of transliteration, as more likely to lead to uniformity of spelling.

Errors in the Index of Authors found in the Annual Indexes, and discovered in the course of compiling the Collective Index of

Authors, were of course rectified before that section of the work was passed for press; other errors detected subsequently when arranging the Subject-Index are given in a separate list on p. xiii. A considerable number of papers were found to have been omitted from the Annual Indexes, and hence are not given in their proper place in the Collective Index; a list of these "Additional Entries," together with a few papers omitted from the Collective Index, will be found on p. vii. *et seq.* Errors of transcription both in the Annual and in the Collective Indexes when detected have also been corrected.

After careful consideration the Committee decided that the Index of Subjects should be essentially, and in the main, alphabetical, but that whenever practicable the substances should be further alphabetically arranged under certain well-defined main groups, *e. g.* alkaloids, carbohydrates, glucosides, terpenes, etc. It was further decided that Agricultural Chemistry, which constitutes a large and to some extent an independent section, should be placed apart.

The Collective Index will be found to differ in many particulars from the Annual Indexes upon which it is based. This was inevitable, as no consistent method of arrangement or of nomenclature was formerly followed. Modern terminology has been employed in the Collective Index, and although special care has been exercised that the same substance should not be entered under different names, it is possible that a few cases of synonyms may have escaped detection. Entries omitted in the subject-portion of the Annual Indexes, discovered in the preparation of the Collective Index, have been duly inserted; a few which have been discovered after the separate sections had been printed off are given on p. xv. In very many cases only the title of a paper appears in the Annual Indexes, and it has been necessary to give supplementary entries as more accurately describing its contents. Hence a large number of additional entries have been made in the Collective Index during its compilation; others of which the desirability was seen later, but which could not be added at the proper time, are given on p. xv. The list also includes double entries omitted from the Collective Index. Clerical and printer's errors which had escaped detection when reading the proofs of the Collective Index have, when discovered, been rectified.

In all cases where these have been definitely ascertained position numbers have been given. The sequence of radicles in the

name of a substance, and the nomenclature of acidic and aromatic radicles have been arranged in a more systematic manner than hitherto, and except in cases where the "trivial" name was judged to be too well established, the name which seemed best to express the constitution of the substance has been preferred. Alternative names have, however, been given with, of course, cross references. Entries relating to inorganic salts will be found under the name of the particular metal: thus, ferrous sulphate will be found under Iron. In the case of organic salts, where the acid is as a rule the distinctive or significant substance, it has been deemed more convenient to place the entries under the name of the acid: thus, calcium oxalate will be found under Oxalic acid. Whenever a prefix, such as *ortho*, *meta*, *para*, *iso*, *secondary*, *tertiary*, *mono*, *di* and *tri*, etc., is not part of the alphabetical arrangement, it is printed in italics.

T. E. T.

## ABBREVIATIONS.

T. = Transactions.  
A. = Abstracts.  
*o* = ortho.  
*m* = meta  
*p* = para.  
*n* = normal.  
*prim.* = primary.  
*sec.* = secondary.  
*tert.* = tertiary.

$\psi$  = pseudo.  
*d* = dextro.  
*l* = laevo.  
*i* = inactive.  
*s* = symmetrical.  
*as* = unsymmetrical.  
b.p. = boiling point.  
m.p. = melting point.



# ADDITIONS AND CORRECTIONS.

## INDEX OF AUTHORS.

### ADDITIONAL ENTRIES IN THE ANNUAL INDEXES OMITTED IN THE COLLECTIVE INDEX.

- Brown, Thomas M.**, estimation of sulphur in pig-iron and steel, 1874, 918.  
**Claus, Adolph**, sulphur compounds of the isopropyl series, 1875, 880.  
**Gladstone, John Hall**, and **Alfred Tribe**, action of the copper-zinc couple on the iodide of ethyl, 1873, 445.  
**Grote, August (Freiherr) von**, and **Bernhard Tollens**, action of sulphuric acid on sugar, 1874, 250, 566.  
**Hausner, Joseph**, wool and cloth dyed green with picric acid, 1877, ii., 243.  
**Hayden, Ferdinand Vanderveer**, sonomaite, a new mineral, 1878, A., 384.  
**Iles, Malvern Wells**, decomposition of slags and silicates, 1881, A., 645.  
**Klien, Georg**, action of sodium ethylate on trichloroacetic acid, 1877, ii., 290.  
preparation of chlorodiethoxyethane, 1877, ii., 291.  
**Klien, Paul**, gypsum crystals from Sittl, 1877, i., 582.

### ADDITIONAL ENTRIES OMITTED FROM THE ANNUAL INDEXES, AND WHICH COULD NOT BE INCLUDED IN THE COLLECTIVE INDEX.

- Aitkin, Thomas**, note on the occurrence and localities of abriachanite, 1882, A., 288.  
**Allport, Samuel**, microscopic structure and composition of British carboniferous dolerites, 1875, 873.  
**Anderson, Thomas**, composition of some of the kinds of guano now in the market, 1873, 1257.  
**Armstrong, Henry Edward**, position of the sulpho-group in phenol-*p*-sulphonic acid, 1874, 1164.  
**Arzruni, Andreas**, cœlestine from Rüdersdorf and Mokattam, 1873, 1012.  
**Baeyer, Adolf von**, furfurol, 1877, ii., 744.  
**Barrett, W. Fletcher**, molecular changes which accompany the magnetisation of iron, nickel, and cobalt, 1874, 766.  
**Bauer, Max**, hemimorphism in caespar, 1873, 1012.  
**Baumhauer, Heinrich**, the corrosion-figures of magnesia-mica and epidote, 1875, 873.  
**Bequerel, Alexandre Edmond**, analysis of the light emitted by phosphorescent uranium compounds, 1873, 25.  
**Bergh, Gustav Adolph**, application of solar heat as a source of mechanical power, 1874, 123.  
**Bergstrand, C. E.**, weathering out of aluminium salts, and their influence on vegetation, 1876, ii., 539.  
**Berthelot, Marcellin (Pierre Eugène)**, heat disengaged by the union of sulphuric acid and water, 1877, ii., 824.  
**Bertrand, Emile**, a blue mineral from Chili, 1882, A., 151.  
**Birnbaum, Karl**, hygroscopic character of monocalcic phosphate, 1873, 1201.

- Bischof, Carl**, on fire clays, especially those exhibited at the Vienna Exhibition, 1874, 300.
- Bock, J. C. A.**, new process in the manufacture of stearin, 1873, 1173.
- Böttger, Rudolph Christian**, depilatory, 1874, 728.
- Bohn, C.**, apparatus for the convenient arrangement of different combinations of galvanic elements, 1874, 766.
- Boltzmann, Ludwig**, experimental determination of the dielectric constants of insulators, 1875, 38.
- Bouchardat**, adulteration of pepper, 1873, 1173.
- Brauns, David**, on the chemical constitution and natural grouping of aluminium silicates, 1874, 1074.
- Brodie, (Sir) Benjamin Collins**, note on the synthesis of marsh gas and formic acid, and on the electric decomposition of carbon oxide, 1873, 744.
- Brögger, Woldemar Christofer**, crystallographic examination of Norwegian minerals: zoisite (thulite); kjerulfine; natrolite; æschynite; euxenite, polycrase; 1881, A., 398.
- Brough, R. S.**, on Wheatstone's bridge, 1874, 766.
- Broxner, Otto**, preservation of meat for army use, 1874, 400.
- Bryan, St. George T.**, auriferous cobalt from Grant Co., Oregon, 1877, ii., 854.
- Bütschli, O.**, a few remarks on chitin, 1876, ii., 104.
- Bunte, Hans**, purification of coal gas, 1878, A., 178.
- Burkart, Hermann Joseph**, on new Mexican localities of certain minerals; noble opal; native arsenic; native platinum, 1875, 551.
- Cazin, Achille**, on the variable period at the close of a voltaic circuit, 1874, 766.
- Champouillon**, on lead poisoning, 1874, 400.
- Chevreur, Michel Eugène**, capillary affinity, 1877, i., 166.
- Claus, Adolph, and Jul. Moser**, azobenzenesulphonic acids, 1878, A., 865.
- Cohen, Emil**, geognostico-petrographic sketches from South Africa, 1874, 1075.  
on some peculiar melaphyre almond-stones from South Africa, 1875, 625.
- Credner, Georg Rudolf**, the crystalline constituents of certain clay-slates and clays, 1875, 873.
- Crookes, William**, action of heat on gravitating masses, 1874, 221.  
on the purification of drinking water, with especial reference to that which is likely to be met with on the Gold Coast, 1874, 300.  
on attraction and repulsion accompanying radiation, 1875, 39.
- Dana, Edward Salisbury**, the trap-rocks of Connecticut, 1875, 874.
- Decharme, C.**, on the spontaneous ascending movement of liquids in capillary tubes, 1874, 767.
- Des Cloizeaux, Alfred Louis Olivier Legrand**, hypersthene crystals from Mont Dore, 1874, 1074.
- Dietrichson, J. L. W.**, a new thermometer for deep sea observations, 1873, 591.
- Döll, Eduard**, copper pyrites and brown spar after cuprite, 1875, 873.
- Doelter, Cornelius**, the quartziferous andesites of Transylvania and Hungary, 1874, 240.  
on some trachytes of the Tokaj-Eperieser Gebirge, 1875, 624.
- Draper, Henry**, on the wave-lengths and characters of the violet and ultra-violet lines of the sun as given by a photograph taken by means of a grating, 1874, 538.  
on the photography of the diffraction-spectrum, and the determination of the wave-lengths of the ultra-violet rays, 1875, 38.
- Drasche, Richard von**, the eruptive rocks of Styria, 1874, 240.  
petrographico-geological observations on the west coast of Spitzbergen, 1875, 874.
- Edlund, Eric**, on the nature of electricity, 1874, 123, 220, 766.  
observations on Roiti's paper, "is the electric current an ether current?" 1874, 865; 1875, 38.
- Ehrlich, Franz Louis**, benzylacetoacetic ether, 1877, ii., 438.
- Engler, Carl, and H. E. Berthold**, triphenylbenzene, 1875, 63.
- Espt, V. van der, Hydrastis canadensis**, or golden seal, and its alkaloids, 1873, 919.

- Fischer, Ferdinand**, on the utilisation of the refuse of towns, 1874, 400.
- Fouqué, Ferdinand**, a new method of proximate analysis of minerals, and its application to the lavas of the last eruption of Santorin, 1873, 477.
- Frébault, Aristide**, new test for acids and alkalis, 1877, i., 344.
- Frenzel, August**, and **Gerhard von Rath**, on some remarkable intergrowths of quartz crystals and caespar from Schneeberg in Saxony, 1875, 873.
- Frickhinger, Hermann**, Wenneberg lava from the Ries, 1875, 874.
- Friedel, Charles**, relations between thermoelectric properties and crystalline forms, 1874, 538.
- Friedrich, O. O.**, the microscopic examination of rocks, 1874, 1075.
- Fritsch, Karl von**, anhydrite and gypsum at Airolo and the Val Canaria, 1874, 673.
- Fuhst, H.**, on the continuous distillation of petroleum, mineral oils, etc., at constant levels, and with fractional condensation, 1873, 660.
- Gaudin, A.**, on the fermentation question, 1873, 294.
- Gawalowski, A.**, filtration under pressure, 1875, 39.  
     self-acting washing apparatus, 1875, 39.  
     apparatus for the safe evolution and combustion of detonating gas, 1875, 39.  
     exsiccator for drying in rarefied air without the use of the air pump, 1875, 39.
- Geinitz, Franz Eugen**, the Neuntmannsdorf meteoric iron of the Dresden Museum, 1877, ii., 177.
- Glashan, J. C.**, on fractional distillation, 1873, 590.
- Gnehm, Robert**, aurantia, 1877, i., 310.
- Grassi, E.**, fermentation of must, 1875, 792.
- Gümbel, C. Wilhelm (Ritter) von**, the palæolithic eruptive rocks of the Fichtel Range, 1874, 1075.
- Guillemare, A.**, substitution of chlorophyll for copper salts in the preservation of fruits and green vegetables, 1878, A., 188.
- Guthrie, Frederick**, on an absolute galvanometer, 1875, 39.
- Haarmann, Gustav A.**, microscopic investigation of the structure and composition of certain melaphyres, 1874, 881.
- Harting, Pieter**, the physometer, a new instrument for determining variable volumes of air and other gases, 1873, 590.
- Heitzmann, Carl**, phases of the life of protoplasm, 1874, 596.  
     development of the periosteum, of bones, and of cartilage, 1874, 596.
- Helland, Amund**, the occurrence of chromite in serpentine, 1877, ii., 120.
- Hervé-Mangon, Charles François**, report on Coignet's process for the preparation of substances of animal origin intended for the manufacture of artificial manure, 1874, 300.
- Herwig, Hermann**, on the number of ether molecules contained in electric conductors and on their weight, 1874, 766.  
     remarks on Edlund's researches on the nature of electricity, 1874, 766.  
     the heat conducting power of mercury is independent of temperature, 1874, 865; 1875, 38.
- Herzen, Alexandre**, preservation of meat, 1876, i., 992.
- Hessenberg, Friedrich**, crystallography-sphene from the Eisbrückalpe, Tyrol, 1873, 1011.  
     axinite from Botallack in Cornwall, 1873, 1012.  
     calcite from Andreasberg, 1875, 1244.
- Holmes, Edward Morrell**, alkaloids from *jaborandi*, 1875, 1269.
- Hull, Edward**, microscopic structure of Irish granites, 1874, 1075.
- Jacobi, H. von**, use of secondary or polarisation batteries as electro-magnetic motors, 1874, 766.
- Jagn, Nic.**, on a water air-pump, 1873, 591.
- Jenks, C. W.**, occurrence of sapphire and ruby with corundum in the Culsagee Mine, Macon County, N. Carolina, 1875, 625.
- Joulin, Léon**, on the development of electricity in mechanical actions, 1874, 766; 1875, 39.
- Junghann, Gustav**, a simple law for the development and grouping of crystal-zones, 1875, 39.

- Kalkowsky, Ernst**, the augitic felsite-porphyrries near Leipzig, 1875, 624.  
 microscopical examination of the micaceous trap of Metzdorf, 1875, 1170.
- Kanonnikoff, Innocentius I.**, and **Alexander M. Saytzeff**, preparation of allyl iodide and acetic anhydride, 1877, ii., 874.
- Kenngott, Gustav Adolf**, on the crystalline forms of quartz, and the trapezohedral tetartohedry of the hexagonal system, 1875, 625.
- Kern, Sergius**, platinum ore from the Ural mountains, 1877, ii., 177.
- Kessler, Friedrich**, on a simple euthyoptic spectroscope, 1875, 38.
- Kielmeyer, A.**, combinations of aniline-black with other colours on cotton, 1876, i., 816.
- Klein, Johann Friedrich Carl**, mineralogical contributions; anatase; xenotime from the Binnenthal, 1875, 873.
- Knochenhauer, K. W.**, on the secondary current, 1874, 123; 1875, 39.
- Knop, Adolf**, on separations of silica and the formation of oolite, 1874, 673.
- Krenner, Josef Alexander**, wolframite from the trachyte of Felső-bánya, 1875, 1244.
- Kühl, A.**, on spontaneous combustion with reference to its prevention in flour mills, 1873, 660.
- Kurz, August**, on the thermal and mechanical expansion of solid bodies, 1874, 221, 767.  
 determination of the specific heat of air, 1874, 865; 1875, 33.
- Ladenburg, Albert**, mesitylene, 1875, 63.
- Landerer, Xaveros**, chrome ores of Greece, 1877, ii., 177.
- Lang, Heinrich Otto**, volcanic ash from Turrialba in Costa Rica, 1875, 1244.
- Lasaulx, Arnold Constantin Peter Franz von**, the eruptive rocks of the Vicentine territory, 1874, 673.  
 on the so-called hemithrenes and other rocks of the gueiss-granite plateau in the Department of Puy-de-Dôme, 1874, 881.  
 crystallographic notices, 1875, 625.  
 scorodite from Dernbach near Montabond; on the magnesite of Baumgarten, near Frankenstein; quartz crystals from Lizzo in Italy, 1875, 1244.
- Laspeyres, Ernst Adolph Hugo**, amethyst-twins with the trigonal pyramid  $P_4^2$  from Oberstein on the Nahe, 1875, 625.
- Lasswitz, Carl Theodor Victor Kurd**, on drops on solid bodies, especially on cylinders, 1874, 767.
- Lehmann, Johannes Georg**, on the action of a basaltic magma in the state of igneous fusion on crystals enclosed in rocks and minerals, carried out on the lavas and basalts of the Lower Rhine, 1874, 1074.
- Lehnebach, A.**, determination of the emissive power of black bodies by means of the ice calorimeter, 1874, 865; 1875, 38.
- Leyser, H.**, new electric machine on Holtz's principle, 1874, 123, 220, 766.
- Lippmann, Gabriel**, relation between capillary and electric phenomena, 1874, 766.
- Lossen, W.**, and **P. Schifferdecker**, isuretin, a base isomeric with urea, 1873, 629.
- Lundquist, Carl Gustaf**, on the reflection of light from the surfaces of isotropic bodies, 1875, 39.
- Madan, Henry George**, improvement in the construction of the spectroscope, 1875, 39.
- Mayer, Alfred Marshall**, an acoustic pyrometer, 1873, 591.
- Meador, J. B.**, discovery of a bismuth mine in Utah, 1874, 881.
- Meyer, Victor**, and **C. Chojnacki**, nitro-compounds of the fatty-series, 1873, 261.
- Michel-Lévy, Auguste**, rocks, in the neighbourhood of the Loire analogous to the granitic porphyries, 1874, 1075.
- Mills, Edmund James**, chemical repulsion, 1881, A., 873.
- Möhl, Heinrich**, microscopic examination and description of a collection of typical basalts, 1875, 551.
- Morton, Henry**, fluorescence of some solid hydrocarbons in coal tar and petroleum residues, 1873, 590.
- Müller, Friedrich Charles George**, a new tangent galvanometer and rheochord, 1874, 220, 766.

- Müller, Friedrich Charles George**, galvanic polarisation and the division of the current in electrolytes, 1874, 866.  
diffusion of gases through the walls of soap bubbles, 1875, 231.
- Müller, Heinrich Wilhelm Hugo**, production of furfural by the action of super-heated steam on wood, 1873, 162.
- Neubauer, Carl Theodor Ludwig**, optical behaviour of wines, 1876, ii., 666.
- Neyreneuf, V.**, action of electricity on flames, solid bodies and gases, 1875, 39.
- Niemann, A.**, cystinuria, 1877, ii., 793
- Pavy, Frederick William**, cupric test pellets for sugars, 1880, A., 761.
- Petersen, Theodor**, desmine from the Seisser-Alp in the Tyrol, 1874, 1074.
- Pickering, Edward C.**, geometrical solution of some electrical problems, 1875, 39.
- Pictet, Amé**, anhydride and ethers of isodibromosuccinic acid, 1881, A., 253.
- Pierce, Frederick Morrish**, physiological action of hydrocotarnine ethylchloride as compared with that of the hydrochloride, 1876, i., 170.
- Pinner, Adolf**, products of the action of chlorine and bromine on aldehyde, 1876, i., 548.
- Pošečný, Franz**, occurrence of gold in the mineral veins of Vöröspatak, 1875, 1244.
- Prud'homme, Maurice**, reduction of indigo by glycerin, 1879, A., 188.
- Quincke, Georg Hermann**, reflection of light from transparent bodies and from metals, 1873, 590.
- Rath, Gerhard von**, rocks from the highland of Quito, 1874, 881.  
a twin-crystal of copper pyrites from Grünau on the Sieg, 1874, 1074.  
albite crystals in volcanic rocks; crystallisation and twin formation of tridymite, 1874, 1074.  
a peculiar twin formation of amethyst, 1874, 1074.  
hypersthene from Mont Dore in Auvergne, 1875, 551.  
geology of Mount Monzoni in S.W. Tyrol, 1875, 1170.  
quartz twin with inclined axes from Japan, 1875, 1244.
- Recknagel, Georg**, on temperature and measurement of temperature, 1874, 123, 767.  
physical relations of carbon dioxide—a contribution to the theory of gases, 1874, 767.
- Regelmann, C.**, the spring-waters of Württemberg, 1875, 1170.
- Roberts, Samuel**, simple condensing collector for frictional electrical machines, 1874, 766.
- Röntgen, Willh. Conr.**, modification of Senarmont's method of determining the isothermal surfaces in crystals, 1875, 38.
- Roiti, Antonio**, is the electric current an ether current? 1874, 766.
- Roscoe, (Sir) Henry Enfield**, self-registering instrument for meteorological measurements of light in universally comparable measure, 1874, 866.
- Sadebeck, Alexander**, crystallisation of galena, 1875, 625.
- Salvétat**, on Pollard's new system of mufles for burning-in colours on porcelain, fayence, and glass, 1874, 400.
- Sandberger, Karl Ludwig Fridolin von**, crystalline rocks of Nassau, 1874, 881.
- Saytzeff, Michael M.**, diallylcarbinol, 1876, i., 548.
- Scacchi, Arcangelo**, aphthalose (arcanite) from Racalmuto, 1875, 1244.  
on a mass ejected from Vesuvius in the eruption of 1872, 1875, 1244.
- Scharff, Friedrich**, transition faces of quartz, 1874, 673.
- Scheibe, Edmund**, cotton seed oil, 1882, A., 436.
- Schrauf, Albrecht**, crystalline form of beryl, 1873, 1011.
- Schuster, Arthur**, unilateral conductivity, 1875, 39.
- Schwalbe, Carl**, action of mustard oil on milk, 1873, 76.
- Sege, H.**, English glaze for earthenware, 1873, 1170.
- Siljeström, Pehr Adam**, preliminary experiments to determine the relation between the variations of density and elasticity of a gas at pressures less than one atmosphere, 1875, 38.
- Smith, Watson**, aniline and its homologues, etc., in coal tar oils, 1874, 853.



- Smith, Watson**, and **J. M. Poynting**, action of chlorine, bromine, etc., on isodinaphthyl, 1874, 854.
- Starting, A.**, utilisation of cracked porcelain basins, 1876, i., 992.
- Stein, Heinrich Wilhelm**, cause of the luminosity of flame, 1874, 866.
- Streng, Johann August**, minerals occurring in the cavities of basalt, 1875, 551.  
crystalline form and twin formation of phillipsite, 1875, 1244.
- Studer, Bernhard**, gneiss and granite of the Alps, 1874, 240.
- Sundell, August Fredrik**, electromotive and thermoelectric forces of some metallic alloys in contact with copper, 1874, 766.
- Thiel, C.**, extraction of fat from bones by light petroleum, 1882, A., 123.
- Törnebohm, Alfred Elis**, the rhombic porphyry of Christiania; some amorphous forms of trap, 1875, 1170.
- Tomlinson, Charles**, action of solid bodies on gaseous supersaturated solutions, 1873, 590.
- Tommasi, Donato**, action of ammonia on phenylchloracetamide and tolylchloracetamide, 1874, 623.
- Topsøe, Haldor**, and **C. Christiansen**, optical researches on certain series of isomorphous bodies, 1874, 767.
- Tribe, Alfred**, precipitation of silver by copper, 1873, 1007.
- Tschermak, Gustav**, crystalline structure of iron especially of meteoric iron, 1875, 873.  
brecciated structure of the meteorites of Orvinio and Chantonny, 1875, 873.
- Vála, Jos.**, and **Rudolf Helmhacker**, occurrence of iron ore between Prag and Beraun, 1875, 1170.
- Versmann, Frederick**, on anthracene production, 1877, i., 239.
- Vidau, Victor Alfred**, action of solar light on potassium iodide, 1875, 326.
- Vierordt, Karl von**, graphic representation of absorption spectra, 1874, 865; 1875, 38.
- Voelcker, Johann Christoph August**, composition of skin-milk and cream from de Laval's cream separator, 1880, A., 780.
- Vogel, Hermann Wilhelm**, differences in the absorption spectra of one and the same substance, 1879, A., 1.
- Vollmar, Moritz**, purification of coal gas by means of the bog-iron ore of Budin, 1874, 396.
- Vrba, Karel**, tridymite imbedded in rock crystal, 1873, 1012.  
contribution to the knowledge of the rocks of South Greenland, 1875, 625.  
mineralogical composition of the lavas of the Kaymenæ in the Gulf of Santorin, 1875, 873.
- Vulpus, Gustav**, behaviour of vulcanised caoutchouc towards illuminating gas, 1879, A., 188.
- Wayne, E. S.**, analysis of the leaves of *Ricinus communis*, 1874, 706.
- Webster, Christian Friedrich Martin**, crystalline form of pucherite from Schneeberg, 1873, 1011.  
some remarkable modes of occurrence of quartz, 1874, 673.
- Weinberg, Jacob**, applications of the mechanical equivalent of heat to molecular forces, weight, and distance, 1875, 39.
- Weiskopf, Paul**, green bronze for iron, 1875, 492.
- Weiss, Christian Ernst**, pseudomorphs of rock salt from Westeregeln, 1874, 881.
- Wichmann, Carl Ernst Arthur**, pseudomorphs of cordierite, 1875, 625.
- Wigner, George William**, and **Robert Henry Harland**, composition of commercial white lead, 1877, ii., 228.
- Winkelmann, Adolf August**, heat of mixture and specific heat of mixed liquids, 1875, 38.
- Winkler, Clemens Alexander**, technical gas analysis, 1873, 651.
- Wright, Arthur Williams**, on the gaseous substances contained in the smoky quartz of Branchville, Conn., 1882, A., 474.

**Yeates, Horatio**, improved form of Grove's battery, 1873, 590.



**Zepharovich, Victor Leopold (Ritter) von**, glauberite crystals and rock salt pseudomorphs from Westeregeln, 1874, 1074.  
crystals of arsenic from Joachimsthal, 1875, 625.  
mispickel from Příbram, 1881, A., 231.

CORRECTIONS.

**Anschütz, Richard**, tetrabromomethanes, 1880, A., 98, *should be* tetrabromethanes.

**Bauer, Alexander**, and **Max Gröger**, new acid of the  $C_nH_{2n-4}O_6$  series, 1881, A., 394, *should be* 1881, A., 894.

**Berthelot, Marcellin**, the temperatures of combustion, 1877, i., 680; 1878, A., 51, *should be* 1877, i., 680; 1878, A., 5.

**Claësson, Johan Peter**, phenylsulphacetic and ethylsulphacetic acids, 1876, i., 959, *should be* 1876, i., 567.

**Claus, Adolph**, and **Oscar May**, azophthalic acid, 1882, A., 15, *should be* 1882, A., 515.

**Conroy, (Sir) John**, the dioxides of calcium and strontium, 1877, ii., 484, *should be* 1873, 808.

**Cross, Charles Frederick**, chemistry of bast fibre, *should be* **Cross, Charles Frederick**, and **Edward John Bevan**.

**Ekstrand, Åke Gerhard**, retene, 1876, i., 68, *should be* 1876, i., 86.

**Fairley, Thomas**, study of hydrogen dioxide and of certain peroxides, etc., 1877, i., 125, *should be* 1877, i., 1, 125.

**Field, Frederick**, ludlamite, a new Cornish mineral, 1877, i., 580, *add* 1877, i., 56.

**Fleming, John Ambrose**, the new contact theory of the galvanic cell, 1875, 120, *should be* 1875, 123.

**Goldschmiedt, Guido**, idriatin, 1879, A., 167, *should be* idrialin.

**Gray, James St. Clair**, and **J. B. Lyman**, *delete* **J. B. Lyman**.

**Haas, Robert**, *should be* **Haass, Robert**.

**Hesse, Oswald**, quinicine and cinchonine, 1876, i., 668, *should be* 1876, i., 608.

**Holbrecker, F.**, *should be* **Hobrecker, F.**

**Holthof, Carl**, simple suction arrangement for rapid filtering, 1877, i., 508, *should be* 1877, ii., 508.

**Iles, Malvern Wells**, and **Ira Remsen**, oxidation of xylenesulphonic acids, 1877, ii., 776; 1878, A., 412, *add* 1878, A., 724.

**Jacquemin, Emile**, rhodine, a new test for aniline, 1876, ii., 655; 1877, i., 109, *should be* 1876, ii., 665; 1877, i., 109.

**Jarolimek, Anton**, hardening of steel, 1877, i., 413, *should be* 1877, i., 113.

**Kingzett, Charles Thomas**, and **Thomas Farries**, the chemical constituents of *Convolutus scammonia*, 1877, ii., 901, *should be* 1877, ii., 904.

**Klein, Otto**, compounds of organic bases with mercuric chloride, 1878, A., 667, *add* 1879, A., 231.

**Klinger, Heinrich Conr.**, thioaldehydes, 1878, A., 132, 720, *add* 1877, ii., 305.

**Landrin, Edouard**, new method of producing stucco, 1874, 1188, *should be* 1874, 1185.

**Losanitch, Sima M.**, *should be* **Losanitsch, Sima M.**

**Ludwig, Ernst**, and **Julius Mauthner**, detection of hydrocyanic acid, 1881, A., 416, *should be* 1881, A., 1175.

**Lyman, J. B.**, *delete* See **James St. Clair Gray**, and *add* separation and detection of strychnine in chemico-legal investigations, 1873, 194, 1265.

- Mazzara**, *Girolamo*, a nitro-derivative of *p*-oxybenzoic aldehyde, 1877, ii., 787, *should be* 1877, ii., 781.
- Merget**, *A.*, artificial reproduction of the phenomena of gaseous thermo-diffusion of leaves by porous and humid pulverulent bodies, 1874, 579, *should be* 1874, 759.
- Neyreneuf**, *V.*, action of electricity on flames, liquids, and powders, 1873, 339, 1093, *should be* 1873, 839, 1093.
- Pinner**, *Adolf*, and *Friedrich Klein*, azobenzenesulphonic acids, 1878, A., 865, *delete*.
- Pode**, *Charles Coleridge*, and *Edwin Ray Lankester*, experiments on the development of bacteria in organic infusions, 1874, 349, *should be* 1874, 85.
- Rilliet**, *Albert A.*, and *Emil Ador*, constitution of benzene, 1876, ii., 383, *should be* 1876, i., 383.
- Rother**, *Reinhold Friedrich Wilhelm*, bismuth and iron salts, 1876, ii., 773, *should be* 1876, ii., 173.
- Schmidt**, *Ernst Albert*, and *Rudolf Köppen*, on veratrine, 1876, ii., 530; 1877, ii., 906, *add* 1878, A., 516.
- Sestini**, *Fausto*, setting of textile plants, *should be* retting of textile plants.
- Skraup**, *Zdenko Hanns*, and *Georg Vortmann*, cinchonidine, 1879, A., 945, *should be* 1879, A., 948.
- Thomsen**, *Hans Peter Jürgen Julius*, heat of formation of cyanogen, 1880, A., 367, *should be* 1880, A., 361.
- Ville**, *Georges*, quick estimation of phosphoric acid, magnesia, and lime, 1873, 292; 1875, 285; *should be* 1873, 294; 1875, 285.
- Völker**, *Ottomar*, ethylpropylcarbinol, 1876, i., 369, *should be* 1876, i., 364.
- Wright**, *Charles Romley Alder*, on the essential oils of wormwood and citronella, 1874, 317, *add* 1874, 1.

## INDEX OF SUBJECTS.

### ADDITIONAL ENTRIES.

#### ALKALOIDS—

- Protamine** in salmon roe (MIESCHER), 1874, 794; (PICCARD), 1875, 566.  
**Sinapine** and its salts (WILL and LAUBENHEIMER), 1880, A., 265.

### CORRECTIONS.

- Acetic acid**, estimation of, in urine, *should be* estimation of, in wine.  
**Albumin**, decomposition of, in plants, *add* (SCHULZE), 1880, A., 493.  
**Albumin**, detection of, in urine, *add* (RAABE), 1882, A., 342.  
**Alkaloids** from jaborandi, *add* (v. POEHL), 1881, A., 447.  
**Analysis**, blowpipe (CORNWALL), 1876, ii., 354, *should be* 1876, ii., 554.  
**Beer**, detection of picric acid in, *add* (ANON.), 1874, 400.  
**Benzoic acid**, isomeric amido- (WIDNMANN), 1878, A., 154, *should be* 1879, A., 154.  
**Boiler-waters**, purification of, *add* (STINGL), 1875, 676.  
**Boiling-points** of metals and metallic salts, *add* (CARNELLEY and WILLIAMS), 1878, T., 281.  
**ELECTROCHEMISTRY—**  
    **Galvanoscope**, capillary, by Siemens (GAWALOWSKI), 1875, 39, *should be* (ANON.), 1875, 39.  
    **Insulators**, experimental determination of the dielectric constants of (KESSLER), 1875, 38, *should be* (BOLTZMANN), 1875, 38.  
    **Insulators**, experimental determination of the dielectric constants of (KESSLER), 1875, 38, *should be* (BOLTZMANN), 1875, 38.  
    **Racemic acid** (*paratartronic acid*) (STAEDEL), 1879, A., 223; (TANATAR), 1880, A., 875; (KEKULÉ and ANSCHÜTZ), 1881, A., 714, *should be* (STAEDEL), 1879, A., 223; (TANATAR), 1880, A., 383; (KEKULÉ and ANSCHÜTZ), 1881, A., 156.



# INDEX OF AUTHORS.

## A.

- Aarland, Georg**, electrolysis of itaconic acid, 1873, 377.  
 — electrolysis of citraconic and mesaconic acids, 1873, 1221.
- Abadie, Aug.**, black blue carbon colour for paper, 1877, i., 361.
- Abbadie, Antoine Thompson d'**, amount of nitric acid in the waters of the Nile, 1879, A., 905.
- Abel, (Sir) Frederick Augustus**, contributions to the history of detonating agents, 1874, 536; 1879, A., 846.  
 — composition of gun-cotton, 1877, i., 453.  
 — colliery explosions, 1881, A., 948.
- Abel (Sir) Frederick Augustus**. See also *(Sir) Andrew Noble*.
- Abeles, Markus**, dissemination of glycogen in the animal organism, 1877, ii., 204.  
 — elementary composition of glycogen, 1882, A., 491.
- Abeljan, Haruhim**, dichlorethyl oxide, 1873, 154.  
 — the action of potassium on benzene, and of ethyl bromide on naphthalene-potassium, 1873, 382.  
 — benzene-potassium, 1876, i., 703.
- Abesser, O., W. Jani and Max Heinrich Märcker**, on the methods employed for estimating phosphoric acid, 1874, 387.
- Abesser, O.** See also *Max Heinrich Märcker*.
- Abney, William de Wiveleslie**, alkaline development of the photographic image, 1877, i., 572.  
 — production of photographs exhibiting natural colours, 1880, A., 72.  
 — photograph of the ultra-red portion of the solar spectrum, 1880, A., 429.
- Abney, William de Wiveleslie**, acceleration of oxidation caused by the less refrangible end of the spectrum, 1880, A., 429.  
 — spectrum of sodium, 1881, A., 862, 957.  
 — on the photographic method of mapping the least refrangible end of the solar spectrum: with a map of the solar spectrum from 7600 to 10750, 1881, A., 957.  
 — spectrum impressed on silver chloride and its bearing on silver printing in photography, 1882, A., 2.  
 — effect of the spectrum on haloid salts of silver and mixtures of the same, 1882, A., 565.  
 — violet phosphorescence of calcium sulphide, 1882, A., 677.  
 — ferro-oxalate-citrate developer, 1882, A., 1009.
- Abney, William de Wiveleslie and Edward Robert Festing**, influence of the molecular grouping in organic bodies on their absorption in the infra-red region of the spectrum, 1881, A., 487, 957; 1882, A., 130.
- Abt, Anton**, continuous spectrum of the electric spark, 1879, A., 765.
- Ackroyd, William**, selective absorption, 1877, i., 571.  
 — transverse absorption of light, 1878, A., 101.
- Acworth, Joseph John**, on the action of nitric acid upon copper, mercury, etc., and on the influence of the presence of metallic nitrates, 1875, 828.
- Acworth, Joseph John**. See also *Henry Edward Armstrong*.
- Adair, A.** See *Arthur Michael*.
- Adam, A.**, new and rapid process for analysis of butter, 1879, A., 80.
- Adam, Paul**. See *Edouard Grimaux*.

- Adamec, Joh.** and **Ed. Klose**, new method of estimating the air space in seeds and fruits, 1880, A., 189.
- Adamkiewicz, Albert**, some reactions of albumin, 1875, 172.
- new reaction for albuminoids and peptones, 1875, 919.
- interchange of material in the animal organism, 1880, A., 565.
- Adams, Frank D.**, presence of chlorine in scapolites, 1879, A., 697.
- analyses of the waters of the Assiniboine and Red Rivers, Canada, 1881, A., 562.
- Adams, William Grylls**, Grove's, Planté's, and Faure's secondary batteries, 1882, A., 352.
- Adie, Richard**, obituary notice of, 1881, T., 191.
- Adler, Alexander**, products from brown-coal tar and some derivatives of chrysene, 1880, A., 263.
- Adlerskron, H. Behagel von**, determination of chlorine and alkalis in vegetable and animal substances, 1875, 186.
- Adlerskron, H. Behagel von.** See also *Carl Graebe*.
- Adlung, M.**, the present state of rice starch manufacture, 1876, ii., 675; 1877, i., 363.
- Ador, Emil**, diphthalyl, 1873, 66.
- phthalyl, the radical of phthalic acid, 1873, 392.
- isophthalophenone, 1880, A., 470.
- Ador, Emil**, and **James Mason Crafts**, action of carbonyl chloride on toluene in presence of aluminium chloride, 1878, A., 405.
- — action of phthalic anhydride on naphthalene in presence of aluminium chloride, 1879, A., 940.
- Ador, Emil**, and **Franz Meier**, xylic acid, its preparation and derivatives, 1880, A., 252.
- Ador, Emil**, and **Albert A. Rilliet**, action of carbonyl chloride on xylol in presence of aluminium chloride, 1878, A., 498.
- — hydrocarbons obtained by the action of aluminium chloride on methyl chloride and benzene, 1879, A., 228, 527.
- Ador, Emil.** See also *Charles Friedel*, *Albert A. Rilliet*, *Albert Sauer*.
- Adriaansz, Adriaan**, on benzene, phenol, monochlorobenzene, and monobromobenzene, 1873, 885.
- Adrian, Huskisson**, dendritic spots in paper, 1874, 754.
- Adrianowsky, A.**, action of acetic and sulphurous anhydrides on aluminium chloride, 1879, A., 620, 915.
- Aeby, Carl**, constituents of bone phosphates, 1873, 354; 1874, 813.
- metamorphosis of bones, 1873, 923.
- contamination of well water, 1874, 1184.
- Agthe, Ell.**, determination of phosphorus in iron and steel, 1882, A., 338.
- Aguiar, A. A. d'**, nitronaphthalenes, 1873, 174.
- derivatives of  $\alpha$ - and  $\beta$ -diamidonaphthalene, 1874, 699.
- Ahlen, J. E.**, compounds of mercuric cyanide with the chlorides of the earth metals, 1877, ii., 423.
- Aillaud**, waters of the Isthmus of Panama, 1882, A., 1178.
- Aitken, Andrew P.**, experiments at the stations of the Highland Agricultural Society, 1882, A., 767.
- Aitken, John**, relations between dust, fog, and clouds, 1881, A., 970.
- colour of the Mediterranean and other waters, 1882, A., 1017.
- Akestorides, Theagenes**, some products of the action of red fuming nitric acid on illuminating gas, 1877, ii., 287.
- Alander, Bruno**, production of potassium ferrocyanide from ammonium thiocyanate, 1878, A., 258.
- Albert, Eduard**, change in colour-tone of spectral colours and pigments by diminution in intensity of the light, 1882, A., 1153.
- Albert, Eugen**, and **Heinrich Albert**, preparation of phosphates, 1881, A., 950.
- Albert, Heinrich**, and **L. Siegfried**, estimation of the value of superphosphates, 1879, A., 967.
- — manuring cress with dicalcium phosphate on soil free from humus, 1881, A., 462.
- Albert, Heinrich**, and **Richard Wagner**, behaviour of phosphates in water charged with carbonic acid, 1881, A., 117.
- Albert, Jos.**, coloured photographs, 1881, A., 1178.
- Alberti, Rud.**, peat, and manures prepared with it, 1882, A., 244.
- Alén, Johan Edvard**, derivatives of  $\delta$ - and  $\epsilon$ -dichloronaphthalene, 1882, A., 409.
- Alessandri, L.**, and **C. Conti**, method for detecting the adulteration of lead iodide, 1877, i., 344.



- Alessandri, Paolo Emilio**, active principles of *Bacus sempercircus*, 1882, A., 711.  
 — extraction of alkaloids by means of oxalic acid, 1882, A., 1003.
- Alessi, P. Alessio**. See **Luigi Balbiano**.
- Alexandrowicz, W.**, actual state of the determination of zinc, 1880, A., 748.
- Alexéeff, Petr P.**, formation of azobenzene, 1871, 261.  
 — crystalline form of azobenzene, 1882, A., 965.  
 — azoennic acid, 1882, A., 971.
- Alexéeff, Vladimir**, mutual solubility of phenol and water, 1877, ii., 472.  
 — action of hydrogen sulphide on propyl aldehyde, 1878, A., 132.  
 — heat phenomena of the solution of alcohols in water, and of water in alcohols, 1881, A., 9.  
 — diazo-compounds, 1881, A., 262.  
 — liquid camphor, 1881, A., 438.  
 — preparation of pure phenol, 1881, A., 723.  
 — phenol hydrate, 1882, A., 611.  
 — aqueous solutions of salicylic acid, 1882, A., 1293.
- Allard, E., Jules Joubert, Félix Le Blanc, Alfred Potier, and Henri Edouard Tresca**, experiments with the Faure secondary battery, 1882, A., 680.
- Allart, A.** See **Henri Pellet**.
- Allary, Eugène**, titration of iodine by stable standard solutions, 1880, A., 285.  
 — analyses of marine Algae, 1881, A., 319.  
 — purification of carbon bisulphide, 1881, A., 800.
- Allary, Eugène, and J. Pellieux**, extraction of potassium iodide from kelp, 1881, A., 319.
- Allary, Eugène**. See also **J. Pellieux**.
- Allbright, William B., Frank H. Morgan, and James G. Woolworth**, action of ethyl chloride on benzene in presence of aluminium chloride, 1878, A., 663.
- Aldred, C. H.**, treatment of mineral and other substances containing small quantities of calcium phosphate, 1881, A., 665.
- Allen, Alfred Henry**, detection of adulteration in tea, 1874, 191; 1875, 786.  
 — detection of adulterations in coffee and chicory, 1875, 785.  
 — butter analysis, 1876, i., 116.  
 — estimation of quinine, 1876, ii., 661.  
 — solution of difficultly soluble substances, 1877, ii., 217.
- Allen, Alfred Henry**, analysis of plating and gilding solutions, 1877, ii., 224.  
 — determination of alcohol in ether and chloroform, 1877, ii., 930.  
 — carbolic acid powders, 1878, A., 1012.  
 — distinctive tests for phenol, cresol, and creosote, 1879, A., 182.  
 — presence of nitrogen in steel, 1879, A., 1017.  
 — petroleum spirit and allied liquids, 1879, A., 1063; 1881, A., 651.  
 — analytical examination of tinctures, 1880, A., 194.  
 — examination of coffee, 1880, A., 353.  
 — presence of nitrogen in iron and steel, 1880, A., 749.  
 — alcohol tables, 1880, A., 773.  
 — specific rotatory power of cane and invert sugar, 1881, A., 653.  
 — isolation of strychnine, 1881, A., 1176.  
 — relative proportions of olefines in shale and petroleum products, 1882, A., 100.  
 — separation of hydrocarbon oils from fat oils, 1882, A., 108.
- Allen, Charles Lewis**, incandescence of cupric antimonate when heated strongly, 1881, A., 513.  
 — analysis of wulfenite from Ruby Hill, Eureka Co., Nevada, 1882, A., 20.
- Allen, Herman van, Viburnum prunifolium**, 1881, A., 104.
- Allen, Oscar D.**, chemical constitution of hatchettolite and samarskite from Mitchell Co., N. Carolina, 1878, A., 206.
- Allen, Oscar D., and William James Comstock**, bastnäsite and tysonite from Colorado, 1881, A., 364.
- Allert, Rud.**, derivatives of *m*-chloro-nitrobenzene and *o*-chlorobenzenesulphonic acid, 1881, A., 902.
- Allihn, Felix**, action of sulphuryl chloride on acetoacetic ether, 1878, A., 566.  
 — compounds of ethyl monochlor-acetoacetate with metals, 1879, A., 915.  
 — conversion of starch into sugar by the action of dilute sulphuric acid at high temperatures, 1881, A., 149.  
 — grape sugar from starch, 1881, A., 770.
- Almeida, Joseph Charles d.** See **Marcellin Berthelot**.
- Almén, Aug.**, formation and detection of hydrocyanic acid, 1873, 93.

- Almén, Aug.**, detection of prussic acid in cases of poisoning, 1873, 193.  
 — relative sensitiveness of phenol and salicylic acid reactions, 1877, ii., 360.  
 — chalybeate springs of Carlstad, 1880, A., 20.
- Almquist, E.**, can bile and sulphuric acid be used as a test for glucosides? 1876, i., 780.
- Amagat, Emile Hilaire**, compressibility of hydrogen and air at high temperatures, 1873, 239.  
 — determination of the relation between the two specific heats by the compression of a limited volume of gas, 1874, 429.  
 — compressibility of liquids, 1877, ii., 833.  
 — compressibility of gases at high pressures, 1879, A., 1004.  
 — dilatation and compressibility of gases under high pressures, 1881, A., 12.  
 — compressibility of oxygen: action of this gas on mercury in eudiometrical experiments, 1881, A., 782.  
 — compressibility of carbonic anhydride and of air under low pressures and at high temperatures, 1881, A., 1094.  
 — action of oxygen on mercury at the ordinary temperature, 1881, A., 1107.  
 — elasticity of rarefied gases, 1882, A., 1259.
- Amato, Domenico**, action of alcohol on potassium cyanate, 1874, 366.  
 — a reaction of chloral, 1876, ii., 505.  
 — action of aniline on chloral and chloral hydrate, 1876, ii., 637.  
 — action of hydriodic acid on olivil, 1878, A., 681.
- Amato, Domenico**, and **Andrea Capparelli**, chemistry of the yew, 1880, A., 899.
- Amato, Domenico**, and **P. Figuera**, gasometric methods, 1880, A., 345.
- Amato, Domenico**. See also **Stanislao Cannizzaro**.
- Ambühl, Gottwalt**, examination of butter, 1882, A., 110.
- Ambühl, Gottwalt**. See also **Victor Meyer, Casimir Wurster**.
- Amenc, Ckiandi, Fabre, and Milius**, manufacture of aluminium sulphate, gelatinous silica, and calcium chloride from blast furnace slags, 1877, ii., 239.
- Ammann, Hugo**, action of nascent hydrogen on bitter almond oil, 1873, 1139.
- Ammon, Georg**, absorptive power of soil constituents for gases, 1880, A., 134.
- Ammon, Georg**, permeability of soils to air, 1881, A., 302.
- Amthor, Carl**, products of the dry distillation of terpenylic acid, 1882, A., 41.  
 — estimation of tartaric acid and of potassium tartrate in wine, 1882, A., 1236.
- Amthor, Carl**. See also **Friedrich Musculus**.
- Ananoff, J.**, substituted phenylphosphines, 1875, 1203.
- Ananoff, J.** See also **Carl Arnold August Michaelis**.
- Ancelin, A.**, use of crystallized sodium acetate for warmers for railway and other carriages, 1882, A., 114.
- Anderson, Elbert**, rectification of the negative silver bath, 1873, 424.
- Anderson, Thomas**, products from *Baphia nitida* (barwood), 1876, ii., 582.
- André, Gustave**, strontium and barium oxychlorides, 1881, A., 979.  
 — heat of formation of calcium oxychloride, 1882, A., 682.  
 — magnesium oxychlorides, 1882, A., 696.  
 — ammoniacal zinc chlorides, 1882, A., 1165.
- Andreae**. See **Adolph Claus**.
- Andreae, Hans**, nitro-*o*- and nitro-*p*-azophenetols, 1880, A., 466.
- Andreasch, Rudolf**, ash of the garden pink and rose, 1879, A., 338.  
 — decomposition of ammonium formate by heat, 1879, A., 705.  
 — characteristic reaction of thioglycollic acid, 1880, A., 236.  
 — decomposition of thiohydantoin by barium hydrate, 1880, A., 236.  
 — synthesis of thiohydantoin by means of thioglycollic acid, 1880, A., 877; 1882, A., 407.  
 — carbamidacetosulphonic acid, 1880, A., 877; 1881, A., 257.  
 — synthesis of methylparabanic and methylthioparabanic acids and of thiocholestophane, 1881, A., 896.  
 — dimethylglyoxylcarbanide, a reduction product of cholestophane, 1882, A., 1054.  
 — methylalloxantins, 1882, A., 1055.  
 — cyamidamalic acid, 1882, A., 1056.
- Andreasch, Rudolf**. See also **Richard L. Maly**.
- Andrée, Ad.**, colouring matter of grapes and bilberries and the artificial colouring of red wines, 1880, A., 927.
- Andreoni, Gustavo**, nicotine, 1879, A., 731.  
 — citric acid, 1880, A., 877.

- Andresen, Momme**, thymoquinonedichlorimide, 1881, A., 590.
- Andresen, Momme**. See also *Rudolf Wilhelm Schmitt*.
- Andrews, Clement Walker**. See *Henry Barker Hill*.
- Andrews, Laurence W.**, ethylene iodopicate, 1880, A., 619.
- bromo-*o*-amido-*p*-benzenesulphonic acid, 1881, A., 174.
- bromo-*o*-nitrobenzenesulphonic acids, 1881, A., 174.
- a convenient form of air thermometer, 1882, A., 135.
- Andrews, Thomas**, composition of an inflammable gas issuing from the silt-bed in Belfast, 1875, 242.
- analysis of the sulphur well at Ballynahinch Spa, 1875, 1243.
- researches on the physical properties of matter in the liquid and gaseous states under varied conditions of temperature and pressure, 1876, ii., 159.
- curious concretion balls derived from a colliery mineral water, 1879, A., 1024.
- Angelbis, Gustar**, conversion of ethyl cyanocarbonate into glycocine, 1875, 754.
- the pierites of Nassau and the labradorite-porphyrries of Westphalia, 1881, A., 387.
- Angot, Alfred**, electrostatic phenomena in voltaic piles, 1874, 1125.
- Ångström, Karl**, expansion of water by the absorption of gases, 1882, A., 687.
- Anitoff**, action of monobromacetyl bromide on zinc ethyl, 1873, 48.
- Annaheim, Joseph**, phenoltrisulphonic acid and derivatives of oxysulphobenzide, 1874, 265.
- nitroxysulphobenzidanilide and diamidoxysulphobenzide, 1874, 697.
- oxysulphobenzide and its derivatives, 1874, 795.
- dibromo- and diiodo-dinitroxysulphobenzide, 1876, i., 296.
- new colouring matter from cresol, 1876, ii., 297.
- the absolute weight of atoms, 1877, i., 31.
- crystalline form, specific gravity, and molecular volume of oxysulphobenzide, 1877, i., 79.
- action of fuming sulphuric acid on resorein, 1877, ii., 613.
- tetranitro-oxysulphobenzide, 1879, A., 244.
- Anrep, Vasilius K. von**. See *Theodor Weyl*.
- Anschütz, Richard**, action of chloranhydrides and anhydrides upon bibasic diatomic acids, 1878, A., 136.
- diphenylene ketone from anthraquinone and pyro-condensation products, 1878, A., 983.
- monobromophenanthrene and phenanthrene dibromide, 1878, A., 984.
- detection of small quantities of fluorene in presence of phenanthrene and anthracene, 1878, A., 985.
- action of ethyl iodide on the silver salts of maleic and fumaric acids, 1879, A., 223.
- tetrabromomethanes, 1880, A., 98.
- preparation of the ethereal salts of tartaric and racemic acids, 1880, A., 876.
- decomposition of citric acid by distillation, 1881, A., 35.
- itaconic, citraconic, and mesaconic acids, 1882, A., 829.
- *d*-tartaric and *l*-malic acid, 1882, A., 830.
- Anschütz, Richard**, and **Carl Bennert**, action of acetic chloride and acetic acid on fumaric acid, 1882, A., 828.
- Anschütz, Richard**, and **Francis Robert Japp**, oxidation of phenanthrenequinone by potassium permanganate, 1878, A., 511.
- Anschütz, Richard**, and **Leonard P. Kinnecutt**, addition of hydrobromic acid by means of a solution of hydrobromic acid in glacial acetic acid, 1878, A., 879.
- phenylglyceric (styceric) acid and related compounds, 1878, A., 981; 1879, A., 644.
- Anschütz, Richard**, and **Wilhelm Petri**, itaconic anhydride, 1881, A., 35.
- Anschütz, Richard**, and **Amé Pictet**, preparation of the ethereal salts of tartaric and racemic acids, 1880, A., 876.
- Anschütz, Richard**, and **Gustav Theodor August Otto Schultz**, new mode of formation of azobenzene, 1877, i., 206.
- action of quicklime on phenanthrenequinone, 1877, i., 210.
- nitrophenanthrenequinone, 1877, i., 210.
- phenanthrenequinone, 1877, ii., 491; 1879, A., 538.
- a new apparatus for the determination of high melting points, 1878, A., 3.
- on the action of bromine upon halogen substitution products of aniline, 1878, A., 49.

- Anschütz, Richard**, and **J. von Siemien-ski**, phenanthrene derivatives, 1880, A., 891.
- Anschütz, Richard**. See also *August Friedrich Kekulé*.
- Ansdell, Gerrard**, physical properties of liquid acetylene, 1879, A., 1028.
- physical constants of liquid hydrochloric acid, 1880, A., 696; 1882, A., 266.
- Anthon, Ernst Friedrich**, formation of molasses, 1875, 198.
- absorption of gypsum by bone-ash, 1875, 386.
- removal of gypsum from water by means of barium oxalate, 1876, ii., 217.
- determination of Glauber's salt in a bitter salt (magnesium sulphate) adulterated therewith, 1876, ii., 326.
- Antweiler, Peter J.** See *Ludwig Claisen*.
- Antz, C.** See *Emil Erlenmeyer*.
- Apjohn, Richard**, analysis of a meteoric stone and detection of vanadium in it, 1874, 104.
- simple apparatus for estimating urea, 1875, 483.
- note on picrotoxin, 1876, ii., 533.
- Appenzeller, Heinrich**, methylaniline-green, 1873, 1242.
- Arata, Pedro N.**, note on the wax contained in the leaves of *Ilex paraguayensis*, 1878, A., 324.
- the tannin of *Ilex paraguayensis*, 1878, A., 581.
- examination of the "gum" of the Quebracho Colorado (*Loropterygium Lorentzii*, Grisebach), 1878, A., 986.
- alkaloid of mio-mio (*Baccharis coridifolia*), 1879, A., 1045.
- chemical examination of *Persea lingue* and its tannin, 1881, A., 600.
- supposed identity of paytine and aspidospermine, 1881, A., 622.
- quebrachitanic acid, 1881, A., 1152.
- Armengaud, Jules Alceis**, industrial production of cold by the expansion of permanent gases and air in particular, 1873, 716.
- Armsby, Henry P.**, action of sulphuric acid on tricalcic phosphate, 1876, ii., 172.
- absorption of bases by the soil, 1877, ii., 913; 1878, A., 913.
- estimation of albumin, 1880, A., 829.
- Armstrong, George Frederick**, diurnal variation of carbonic anhydride in the air, 1881, A., 974.
- Armstrong, Henry Edward**, action of the acid chlorides on nitrates and nitrites. Part I. Action of acetic chloride, 1873, 683.
- naphthyl sulphides, 1874, 803.
- action of sodium formate on potassium benzenedisulphonate, 1874, 804.
- haloid derivatives of the nitrophenolsulphonic acids, 1874, 804.
- isomeric changes in the phenol series, 1875, 520.
- action of iodine on oil of turpentine, 1880, A., 125.
- Armstrong, Henry Edward**, and **Joseph John Acworth**, gases evolved by the action of metals on nitric acid, 1877, ii., 54.
- Armstrong, Henry Edward**, and **Frederick Douglas Brown**, behaviour of nitrophenol (m.p. 45°) with sulphuric acid, 1874, 1164.
- decomposition of dichloronitrophenol by heat, 1874, 1165.
- Armstrong, Henry Edward**, and **Norman Child Graham**, researches on the laws of substitution in the naphthalene series, No. 1, 1881, T., 133.
- Armstrong, Henry Edward**, and **George Henry Uwin Harrow**, action of potassic sulphite on the haloid derivatives of phenol, 1876, i., 474.
- note on the action of nitric acid on tribromophenol, 1876, i., 477.
- Armstrong, Henry Edward**, and **Edward William Prevost**, behaviour of nitrophenol with chlorine and bromine, 1874, 1164.
- Armstrong, Henry Edward**, and **William Augustus Tilden**, on the action of sulphuric acid on the hydrocarbons of the formula  $C_{10}H_{16}$ , 1879, T., 733.
- remarks on Kolbe's discovery of a new cymene in light rosin oils, 1881, A., 40.
- Arnaud, Albert**, a new cinchona alkaloid, 1882, A., 229.
- Arnaudon, J.**, use of quebracho as a dye-stuff, 1877, ii., 951.
- Arnold, Arthur Edward**, the analysis of tin ores, 1877, ii., 922.
- solubility of stannic oxide in hydrochloric acid, 1879, A., 888.
- phosphorus in ancient iron, 1879, A., 1074.
- note on a crystallised slag isomorphous with olivine, 1881, A., 1016.
- obituary notice of, 1882, T., 236.
- Arnold, Carl**, Fehling's solution, 1881, A., 942.
- new reactions of milk, 1882, A., 109.



- Arnold, *Carl*, peat as litter, 1882, A., 333.  
 — free fatty acids in cows' milk, 1882, A., 987.  
 — estimation of urea by sodium hypobromite, 1882, A., 1141.  
 Arnold, *John Oliver*, estimation of phosphorus in steel, 1881, A., 646.  
 — estimation of chromium in iron and steel, 1881, A., 646.  
 Arnold, *Lauren Briggs*, effect of oxygen on the quality of butter, 1881, A., 1184.  
 Arnoldi, *C.*, opium testing, 1874, 1018.  
 Arnot, *William*, obituary notice of, 1881, T., 190.  
 Aron, *Julius*, the action of quartz-sand and lime on clays in the firing process, 1876, i., 448.  
 Aronheim, *B.*, synthesis of phenyl-butylene, 1873, 499; 1874, 689.  
 — synthesis of naphthalene, 1873, 632.  
 — occurrence of allyl alcohol amongst the products of the distillation of wood, 1875, 246.  
 — a new method of chlorinating hydrocarbons by means of molybdenum pentachloride, 1876, i., 391.  
 — action of sodium amalgam on benzyl chloride, 1876, i., 580.  
 — action of stannic chloride on benzene, 1877, ii., 324.  
 — synthesis of the compounds of phenyl with tin, 1879, A., 249.  
 — on Schützenberger's chlorine and iodine acetates, 1879, A., 452.  
 — action of nitrous acid on resorcinol ethers, 1879, A., 465.  
 — action of nitrous acid on stannic phenyl chloride, 1879, A., 651.  
 Aronheim, *B.*, and *G. Dietrich*, chlorination of toluene by means of molybdenum pentachloride, and on some new derivatives of toluene, 1876, i., 392.  
 Aronheim, *B.* See also *M. Baswitz*, *Hugo Köhler*, *Franz Josef König*.  
 Aronstein, *Louis*, conversion of normal into isopropyl bromide by heat, 1881, A., 567.  
 — action of ethyl bromide on ethyl bromacetate, 1881, A., 576.  
 Aronstein, *Louis*, and *J. M. A. Krampa*, action of ethyl iodide on ethyl iodacetate, 1880, A., 541.  
 — action of methyl iodide on methyl iodacetate, 1881, A., 576.  
 Arsonval, *A. d'*, maintenance of constant temperatures, 1877, ii., 697.  
 — estimation of sugar in blood, 1879, A., 674.  
 Arsonval, *A. d'*, a new voltaic condenser, 1880, A., 521.  
 — voltaic cells, 1881, A., 3.  
 — animal heat, 1881, A., 1049.  
 Arsonval, *A. d'*, and *Louis Couty*, effect of maté on the gases of the blood, 1881, A., 1051.  
 Arth, *Georges*, action of cyanogen on sodium menthol, 1882, A., 1213.  
 Artopé, the angitic trachytes of the Andes, 1874, 559.  
 Arx, *J. von*,  $\alpha$ - and  $\beta$ -naphthylene-phenylene oxides, 1881, A., 282.  
 Arzruni, *Andreas*, on the isomorphism of the anhydrous sulphates of the alkaline earths, 1873, 247.  
 — octahedral borax, 1877, ii., 112.  
 — saffrole, 1877, ii., 202.  
 — the influence of temperature on the coefficients of refraction of the natural sulphates of barium, strontium and lead, 1878, A., 189.  
 — crystallographical and chemical examination of some arsenical pyrites (mispickel), 1879, A., 900.  
 — coquimbite, 1881, A., 397.  
 Aschenbrandt, *Heinrich*, *p*-diethylbenzene from *p*-dibromobenzene, 1879, A., 920.  
 Ashby, *A.*, formula for calculating the quantity of water added to diluted spirit, 1881, A., 1182.  
 Ashworth, *James*. See *George Whitaker*.  
 Asselin, *E.*, solubility of metallic oleates and of calcium sulphate in glycerin, 1873, 875.  
 Astaschewsky, formation of acid, and the amount of lactic acid in muscle, 1882, A., 539.  
 Atkinson, *Robert William*, perthiocyanic acid, 1877, ii., 254.  
 — estimation of phosphoric acid in presence of silicic acid, 1877, ii., 353.  
 — on perthiocyanate of silver, 1880, T., 226.  
 — diastase of Kôji, 1881, A., 1059.  
 — brewing in Japan, 1882, A., 432.  
 Atkinson, *Robert William*, and *Hikokurô Yôshida*, on peppermint camphor (menthol) and some of its derivatives, 1882, T., 49.  
 Attenkofer, *G.*, a simple gasholder, 1879, A., 877.  
 Atterberg, *Albert*, on some compounds of glucinum (beryllium), 1873, 1003; 1874, 658.  
 — contributions to the chemical history of molybdenum, 1874, 339.  
 — action of chlorine on nitronaphthalene, 1876, i., 915; ii., 516.



- Atterberg, Albert**, further contributions to our knowledge of beryllium (glucinum), 1876, ii., 382.  
 — the ferrocyanogen compounds of the metallic acids, 1876, ii., 508.  
 — action of phosphorus pentachloride on nitronaphthalenes, 1877, i., 85.  
 — on the ferrocyanides of Wyruboff, 1877, i., 298.  
 — derivatives of  $\alpha$ - and  $\beta$ -dinitro-naphthalene, 1877, i., 466.  
 — the constitution of some derivatives of naphthalene, 1877, i., 466.  
 —  $\alpha$ -derivatives of naphthalene, 1877, ii., 623.  
 — the terpenes of Swedish wood-tar from *Pinus sylvestris*, 1878, A., 79.  
 — decomposition of wood-tar at a red heat, 1878, A., 862.  
 — on naphthalene chloride, 1878, A., 887.  
 — fluoranthene, 1878, A., 889.  
 — probable occurrence of furfuran (*tetraphenol*) and a homologous compound in the products of the dry distillation of pine wood, 1880, A., 663.  
 — ethereal oil of *Pinus pumilio*, 1882, A., 410.  
**Atterberg, Albert**, and **Oskar Widman**, the derivatives of  $\gamma$ -dichloronaphthalene, 1877, ii.; 901.  
 — new chloronaphthalenes, 1878, A., 321.  
**Attfield, John**, absence of morphine from the petals of *Papaver rhoeas*, 1874, 911.  
 — chrysarobin, 1875, 1269.  
 — analyses of preserved vegetables, 1877, ii., 952.  
 — copying ink for transcribing letters without a press, 1882, A., 128.  
**Attwood, George**, quantitative assay of the ores and compounds of mercury by the blowpipe, 1879, T., 207.  
 — on a gold nugget from South America, 1879, T., 427.  
 — a contribution to South American geology, 1881, A., 390.  
**Aubert, Hermann**, the quantity of carbonic acid excreted by the human skin, 1873, 396.  
**Aubin, Emile**. See *Achille Müntz*.  
**Aubrey-Vitet, E.**, treatment of waste water, 1882, A., 668.  
**Audigé**. See *Dujardin-Beaumetz*.  
**Audouin, Paul**. See *E. Pelouze*.  
**Audoynaud, A.**, on the ammonia contained in the sea-water and salt-marshes around Montpellier, 1876, i., 356.  
**Audoynaud, A.**, and **B. Chauzit**, passage of rain through the soil, 1881, A., 1071; 1882, A., 88.  
**Auerbach, Félix**, the passage of the galvanic current through iron, 1879, A., 686.  
**Auerbach, Gustave**, alizarin-blue, 1879, T., 799.  
**Augustin, Franz**, daily rainfall, 1882, A., 1227.  
**Augustin, W.**, and **Julius Post**, on the influence of substituted radicles in benzene on the introduction of new groups, 1876, i., 386.  
**Aumann, Jas. H. S.**, reduction of magnesium from its oxide by metallic aluminium, and production of artificial spinelle, 1878, A., 933.  
 — analysis of tabasheer from Sumatra, 1878, A., 945.  
**Austen, Peter Townsend**, preliminary notice on a new salt of quinine, 1873, 1148.  
 — nitrodiphenylamines, 1875, 165.  
 — preparation of di- and tri-nitro-phenol, 1875, 1022.  
 — bromobenzenes, 1876, i., 389.  
 — dinitro-*p*-dibromobenzenes and their derivatives, 1876, ii. 406, 513; 1879, A., 50.  
 — some simple laboratory manipulations, 1877, ii., 701.  
 — nitro-derivatives of diphenylamine, 1877, ii., 756.  
**Austen, Peter Townsend**, and **Francis A. Wilber**, precipitation of titanio acid, 1882, A., 1234.  
**Austin, Amory**, diamylbenzene, 1880, A., 107.  
**Avenarius, M.**, internal latent heat, 1875, 125.  
**Averdam, W.**, phosphoric acid in Peruvian guano, 1882, A., 1316.  
**Aymonnet, J.**, calorific spectra, 1876, ii., 374.  
 — relation between the absorbing powers of bodies for heat and their chemical equivalents, 1877, i., 430.  
 — on the quantity of heat absorbed by certain substances, 1877, i., 432.  
 — diathermancy of metals and paper, 1877, ii., 405.  
**Aymonnet, J.** See also *Paul Desains*.  
**Ayrton, William Edward**, electrical properties of beeswax and lead chloride, 1879, A., 427.  
**Ayrton, William Edward**, and **John Perry**, the contact theory of voltaic action, 1878, A., 363.  
**Ayrton, William Edward**. See also *John Perry*.

## B.

- Babcock, James F.**, arsenic iodide, 1876, i., 191.
- Babcock, S. Moulton**, celestine from the Muschelkalk of Jühnde, near Göttingen, 1881, A., 521.
- Babcock, S. Moulton**. See also *Hans Hübner*.
- Babo, A. W. (Freiherr) von**, fining of wines, 1877, ii., 379.
- bouquet of Rhine wine, 1882, A., 122.
- Babo, Clem. Heinr. Lambert (Freiherr) von**, oven for heating sealed tubes, 1880, A., 846.
- Bach, O.**, tests for solanine, 1873, 1263.
- detection of aloes and analogous bitters, 1874, 923.
- examination of the waters of the Kirchhofbrunnen at Leipzig, 1874, 969.
- Bachhoffner, George Henry**, obituary notice of, 1880, T., 255.
- Bachmeyer, Wilhelm**, tannic acid as an alkalimetric indicator, 1881, A., 946.
- Baerle, van (& Co.)**, water-glass emery stone, 1876, i., 124.
- Bäsecke, H.** See *Gustav Kühn*.
- Bässler, Paul**, action of ethyl chloro-carbonate on sodium cyanamide, 1878, A., 214.
- Baessler, Paul**, analysis of wild vetch, 1882, A., 883.
- Bätcke, C.** See *Adolph Claus*.
- Baeyer, Adolf von**, compounds of aldehydes with phenols and aromatic hydrocarbons, 1873, 501.
- mellitic acid, 1873, 755.
- compounds of aldehydes and alcohols with aromatic hydrocarbons, 1873, 884.
- aldehyde and benzene, 1875, 148.
- nitrosobenzene and nitrosonaphthalene, 1875, 452.
- the compounds of phthalic acid with the phenols, 1877, i., 193; 1880, A., 650.
- on the phthalin and phthalidein of phenol, 1877, i., 307.
- phthalic aldehyde, 1877, ii., 332.
- furfural, 1877, ii., 444.
- oxyphthalic acid, 1877, ii., 784.
- regularity of melting point of homologous compounds, 1878, A., 3.
- synthesis of oxindole, 1878, A., 587.
- synthesis of isatin and indigo-blue, 1878, A., 884.
- synthesis of indigo-blue, 1878, A., 884.
- Baeyer, Adolf von**, action of phosphorus pentachloride on isatin and allied compounds, 1879, A., 535.
- diphenylphthalide and phenylphthalcin, 1879, A., 636.
- compounds of the indigo-blue group, 1879, A., 937; 1882, A., 198, 619, 1100.
- synthesis of quinoline, 1879, A., 916.
- action of potassium pyrosulphate on indigo-white, 1880, A., 46.
- relation of cinnamic acid to the indigo group, 1881, A., 274.
- preparation of scatole from indigo, 1881, A., 278.
- phenolphthalein anhydride and the constitution of fluorescein, 1882, A., 1096.
- Baeyer, Adolf von**, and *Jean Baptiste Burkhardt*, diimidophthalcin of phenol, 1878, A., 866.
- dioxycbenzophenone, 1878, A., 886.
- Baeyer, Adolf von**, and *Heinrich Caro*, synthesis of anthraquinone derivatives from benzene derivatives, 1875, 66.
- action of nitrous acid on dimethylaniline, 1875, 83.
- synthesis of indole, 1877, ii., 898.
- Baeyer, Adolf von**, and *Paul Friedländer*, diphenyleneglycollic acid, 1877, ii., 336.
- Baeyer, Adolf von**, and *Oscar Roland Jackson*, synthesis of methylketole, an isomeride of scatole, 1880, A., 395.
- synthesis of the homologues of hydrocarbostyryl and quinoline, 1880, A., 406.
- Baeyer, Adolf von**, and *C. Jaeger*, amides of diazobenzene, 1876, i., 273.
- Baeyer, Adolf von**, and *Ludwig Landsberg*, synthesis by means of phenylacetylene and its derivatives, 1882, A., 622, 972.
- Baeyer, Adolf von**, and *Conrad Schraube*, bromoscatole, 1878, A., 869.
- Baeyer, Adolf von**, and *Paul Tönnies*, furfuralic acid and furfurobutylene, 1877, ii., 746.
- Baeyer, Adolf von**, *Bühlig*, and *Wilhelm Koenigs*, amidophthalic acid, 1877, ii., 336.
- Bahlmann, Ad.**, *o*-bromobenzenesulphonic acid, 1876, ii., 306.
- *o*-amidobenzenesulphonic and *o*-bromobenzenesulphonic acids, 1877, ii., 608.

- Baily, Walter**, optical properties of starch, 1877, i., 291.
- Baker, A. L.**, amount of water of crystallization of hydrated nitrate of strontium, 1881, A., 509.
- artificial production of living-stonite, 1881, A., 518.
- analysis of a ferruginous mineral from Anihurst Co., Va., 1881, A., 554.
- examination of the mother liquors from salt brines of West Virginia for iodine, 1882, A., 25.
- Baker, Harry**, fluorine compounds of vanadium, 1878, T., 388.
- on some thionates, 1878, A., 112.
- a study of certain cases of isomorphism, 1879, T., 760.
- on a crystal of diamond, 1880, T., 579.
- Baker, Harry**. See also *Shigetake Suguira*.
- Baker, W. H.**, analysis of a swallet in the Empire mine of the Luzern Company, 1876, i., 890.
- Baker, William**, obituary notice of, 1879, T., 265.
- Bakhoven, G. H. Beignes**, new amylic alcohol, 1874, 139.
- Balard, Antoine Jérôme**, obituary notice of, 1877, i., 512.
- Balbiano, Luigi**, inactive fermentation amylic alcohol, 1877, i., 292.
- action of sodium hydrate on inactive fermentation amylic alcohol, 1877, i., 409.
- action of chlorine on butyric acid, 1878, A., 134.
- sulphonic acids of normal butylbenzene, 1878, A., 314.
- $\beta$ -chlorobutyric acid and some of its derivatives, 1878, A., 658.
- $\alpha$ -isochlorobutyric acid and its derivatives, 1879, A., 615.
- amides and anilides of  $\beta$ -hydroxybutyric acid, 1880, A., 461.
- some derivatives of  $\beta$ -chlorobutyric acid, 1880, A., 511.
- action of sodium ethylate on some brominated compounds of the aromatic group, 1882, A., 168.
- Balbiano, Luigi**, and **P. Alessio Alessi**, action of electrolytic hydrogen on bibasic acids of the acetic series, 1882, A., 1185.
- Balbiano, Luigi**, and **Andrea Testa**, dibutylsuccinic acid and a polymeride of methacrylic acid, 1880, A., 871.
- Palentine, W.**, diazo-compound of hydrazobenzenesulphonic acid, 1880, A., 809.
- Ballard**, contemporaneous formation of zigueine and malachite on some old Roman coins, 1876, i., 349.
- experiments on the alcohol from Barbary figs, 1877, i., 355.
- influence of the leaves and flowering branches on the nature and quantity of the sugar contained in the flower-stem of the agave, 1877, ii., 506.
- waters of the Chécliff, 1879, A., 699.
- *Phytolacca dioica*, 1881, A., 1151.
- a cause of alteration of textile fabrics, 1881, A., 1185.
- an ancient ostrich egg, 1882, A., 242.
- Ballin**. See *Robert de Forcrand*.
- Balling, Carl A. M.**, estimation of silver in galena, 1880, A., 748.
- Ballmann, H.**, estimation of lithium by the spectroscope, 1876, ii., 550.
- Balló, M.**, action of ethyl oxalate on naphthylamine, 1873, 913.
- analysis of the water of the Danube at Budapest, 1878, A., 480.
- mineral waters of Budapest, 1879, A., 125.
- action of dehydrating agents on camphoric and camphoramie acids, 1879, A., 539.
- constitution of camphor compounds, 1880, A., 50.
- isobutylallylmalonic acid, 1881, A., 415.
- a new property of camphor, 1881, A., 438.
- oxidation products of camphor, 1881, A., 438.
- Balmain, William Henry**, obituary notice of, 1880, T., 256.
- Balsohn, Max**, action of ethylene on benzene in presence of aluminium chloride, 1879, A., 785.
- synthesis of ethylbenzene from ether and benzene, 1880, A., 463.
- Balsohn, Max**. See also *Charles Friedel*.
- Baltus, E.** See *Joseph Béchamp*.
- Baltzer, A.**, new locality of silicic acid in the Island of Vulcano, 1875, 1166.
- Baltzer, Carl**,  $\alpha$ -naphthaquinoneanilide and its derivatives, 1882, A., 204.
- Bamberger, Eugen**, guanylthiocarbamide and some guanylguanidines, 1881 A., 43.
- compounds of phenylthiocarbamide with acid amides, 1882, A., 393.
- action of guanidine carbonate on phenylthiocarbamide in presence of water, 1882, A., 394.

- Bamberger, Eugen, and Karl Feussner**, sodalite from Tiahuanaco, 1882, A., 285.
- Bamberger, Eugen, and Julius Philipp**, iodides of arsenic, 1882, A., 367.
- Bamberger, Max**, action of cement on lead pipes, 1882, A., 1335.
- Bancel, C., and C. Husson**, phosphorescence of lobsters' flesh, 1879, A., 665.
- Bandrowski, Ernst von**, constitution of phenylbromethyl, 1875, 62.
- the condensation products of guanidine valerate and caproate, 1876, ii., 190.
- acetylenedicarbonic acid, 1877, ii., 592; 1880, A., 160.
- reaction of dibromosuccinic acid with water, 1879, A., 523.
- potassium propargylate, 1881, A., 239.
- Bannow, A.**, preparation of gaseous hydriodic acid, 1875, 999.
- an isomeric potassium cyanate, 1881, A., 144.
- Bantlin, A.**, new nitro-derivatives of phenol, 1875, 640.
- conversion of *m*-nitrophenol into trinitroresorcin, 1877, ii., 475.
- *m*-nitrophenol and its derivatives, 1879, A., 237.
- Baranetzky, J.**, investigations on diosmose, 1873, 346.
- starch altering ferments in plants, 1880, A., 331.
- Baranowski, Joseph J.**, the mineralogical and chemical composition of the granitic porphyries, 1875, 622.
- Barbaglia, Giovanni Angelo**, polymeric modification of isobutaldehyde, 1873, 378; 1874, 46.
- action of chlorine on isobutaldehyde, 1873, 877.
- commercial and pure isobutyl alcohol and isobutaldehyde, 1873, 1217.
- itaconic, citraconic and mesaconic acids, 1874, 787.
- action of chlorine on acetone, 1874, 789.
- derivatives of  $\alpha$ -phenylenediamine, 1875, 273.
- thiovaleraldehyde, 1881, A., 34.
- Barbaglia, Giovanni Angelo, and Pietro Gucci**, action of chlorine on diisopropyl ketone, 1881, A., 34.
- dry distillation of calcium isobutyrate, 1881, A., 35.
- action of heat on sodium hydrogen sulphite, 1881, A., 224.
- Barbaglia, Giovanni Angelo, and August Friedrich Kekulé**, action of phosphoruspentachloride on sulphonic acids, 1873, 277.
- Barbier, F. A. Philippe**, fluorene, 1873, 1226; 1875, 456; 1876, ii., 77.
- the isomerides of anthracene and their hydrides, 1874, 1091.
- action of heat on phenylxylene, 1875, 62.
- attempts to produce fluorene, 1875, 251.
- fluorene and its alcohol, 1876, ii., 77.
- fluorene and pyrogenic hydrocarbons, 1877, i., 70.
- action of acetic anhydride on phenol aldehydes, 1880, A., 318, 468.
- Barbieri, Johann**, mixed azo-compounds, 1876, ii., 94.
- albuminoids of gourd seeds, 1879, A., 272.
- Barbieri, Johann**. See also *Victor Meyer, Ernst Schulze*.
- Barbsche, C.**, new reagent for glycerol, 1882, A., 104.
- Bardy, Charles**, ehrysoidin an antiphotogenic colour, 1878, A., 613.
- assay of wood spirit for the preparation of methylated spirit, 1881, A., 942, 1174.
- Bardy, Charles, and Lucien Bordet**, estimation of methyl alcohol in wood spirit, 1879, A., 487.
- preparation of methyl formate and pure methyl alcohol, 1879, A., 520.
- Bardy, Charles**. See also *Alfred Riche*.
- Barfoed, Christen Thomsen**, dextrin, 1873, 611.
- detection of grape-sugar in presence of dextrin and other allied bodies, 1873, 1163.
- on the separation of fatty acids from ordinary rosin, 1876, i., 771.
- Barilari, S.**, action of salicylic acid on iron, 1878, A., 151.
- formation of ferrous salicylate, 1878, A., 317.
- Barisch, F.**, monobromoeinnamic acids and phenylfumaric acid, 1880, A., 43.
- Barnes, James B.**, taraxacum root, 1880, A., 720.
- Barnes, Joseph**, on the estimation of the value of zinc powder, and on a gauge for measuring the volume of gases without calculation for temperature and pressure, 1881, T., 462.
- Barnes, P.**, cost of setting up a Siemens' furnace, 1878, A., 456.
- Barr, Richard Lilburn**. See *Edmund James Mills*.



- Barral, Jean Augustin**, the influence which the sampling of manures exercises on their analysis, 1876, i., 780.  
 — nitrates in beet-roots, 1879, A., 337; 1880, A., 495.
- Barral, Jean Augustin**, and **Salvétat**, note on the destruction of the vegetable matters mixed with wool, 1876, i., 821.
- Barret, Edward Louis**. See **Charles Henry Wood**.
- Barrett, W. Fletcher**, relationship of the magnetic metals, 1874, 229.  
 — certain remarkable changes occurring in iron wire at a low red heat, 1874, 230.
- Barry, Thomas Dykes**, propiophenone, 1874, 74.
- Barsilowsky, Jacob N.**, oxidation of solid toluidine by potassium manganate, 1874, 273; 1875, 1037.  
 — *m*-azotoluene, 1878, A., 300.  
 — azo-derivatives of toluene, 1879, A., 237; 1881, A., 432.
- Barth, Mac**, action of bromine on sodium ethylate, 1877, i., 290.  
 — invertin, 1878, A., 590.  
 — compound of alumina with carbonic anhydride and ammonia, 1880, A., 791.  
 — hygienic significance of drinking water, 1882, A., 1142.
- Barth, Max**. See also **Julius Nessler**.
- Barth von Barthenau, Ludwig (Ritter)**, on tetramethylammonium ferrocyanide, 1876, i., 576.  
 — an ether of resorcin, 1876, i., 921.  
 — thymol derivatives, 1878, A., 574.  
 — dioxybenzoic acids, 1879, A., 157, 644.  
 — thymoloxycuninic acid, 1879, A., 158.
- Barth von Barthenau, Ludwig (Ritter)**, and **Guido Goldschmiedt**, reduction of ellagic acid by zinc dust, 1878, A., 733.  
 — ellagic acid, 1879, A., 930.
- Barth von Barthenau, Ludwig (Ritter)**, and **Josef Herzig**, mesitylenesulphonic acid, 1881, A., 733.
- Barth von Barthenau, Ludwig (Ritter)**, and **Michael Kretschy**, picrotoxin, 1881, A., 286.  
 — composition of picrotoxin, 1882, A., 412.
- Barth von Barthenau, Ludwig (Ritter)**, and **Max von Schmidt**, derivatives of  $\alpha$ -phenoldisulphonic acid, 1879, A., 933.
- Barth von Barthenau, Ludwig (Ritter)**, and **Josef Schreder**, diphenol, 1879, A., 64.
- Barth von Barthenau, Ludwig (Ritter)**, and **Josef Schreder**, action of fused soda on phenol: synthesis of phloroglucinol, 1879, A., 633.  
 — oxidation of resorcinol to phloroglucinol, 1879, A., 633.  
 — fusion of aromatic acids with soda, 1879, A., 926.
- Barth von Barthenau, Ludwig (Ritter)**, and **Carl Senhofer**, a condensation product of oxybenzoic acid, 1874, 266.  
 — constitution of dioxybenzoic acid, 1875, 365.  
 — benzenedisulphonic acid, 1875, 1195.  
 — on the action of fuming sulphuric acid on benzenesulphonic acid, and on a new benzenedisulphonic acid, 1876, i., 585.  
 — phenol-*m*-sulphonic acid, 1876, ii., 410.  
 — dibenzamide, 1876, ii., 417.
- Barth von Barthenau, Ludwig (Ritter)** and **Hugo Weidel**, action of hydrochloric acid on resorcin, 1878, A., 61.
- Barthélemy, Aimé**, endosmose of gases through vegetable membranes, 1873, 1251.  
 — absorption of bicarbonates from natural waters by plants, 1876, ii., 113.
- Bartlett, Henry Crichett**, notes on some peculiar modifications of animal fats, the result of fermentation and the digestion of the neutral fats of food, prior to, and during assimilation, 1877, ii., 207.  
 — presence of arsenic in the atmosphere, 1880, A., 585.
- Bartley, E. H.**, estimation of antimony in alloys, 1876, i., 748; 1877, ii., 222.
- Bartoli, Adolfo**, and **Giorgio Papascgli**, synthesis of organic acids by the electrolysis of water with carbon electrodes, 1882, A., 58.  
 — compounds formed in the electrolysis of various liquids by means of carbon electrodes, 1882, A., 406.  
 — electrolysis of various solutions, acid, neutral, and alkaline, with graphite electrodes, 1882, A., 850.  
 — mellogen, a new compound obtained by electrolysis, 1882, A., 850.  
 — electrolysis of phosphoric acid solutions with electrodes of gas-coke and graphite, 1882, A., 852.
- Barus, Carl**, the thermoelectric position and electric conductivity of steel in their relation to its hardness, 1879, A., 999.
- Basaroff, Alexander von**, synthesis of paralanic acid, 1873, 75.

- Basaroff, Alexander von**, constitution of periodic acid, 1873, 596.  
 — fluoxyboric acid, 1874, 1056.  
 — fluoboric acid and its salts, 1874, 1134.  
 — lecture experiment on torpedoes, 1877, ii., 275.
- Bastian, Henry Charlton**, note on the origin of Bacteria and on their relation to the process of putrefaction, 1873, 406.  
 — observations on the temperature at which Bacteria, Vibriones and their supposed germs are killed when exposed to heat in the moist state; and on the causes of putrefaction and fermentation, 1874, 85.  
 — influence of physico-chemical forces on the phenomena of fermentation, 1876, ii., 542.  
 — the fermentation of urine, in reference to a communication by Pasteur, 1877, i., 222.
- Baswitz, M.**, diastase, 1878, A., 903; 1880, A., 132.
- Baswitz, M.**, and **B. Aronheim**, attempts to prepare allylbenzene, 1875, 1188.
- Batalin, A.**, influence of light on the formation of red pigment, 1882, A., 611.
- Batchelor, E. C.**, examination of *Aesculus Paria*, the red horse-chestnut, 1874, 598.
- Battandier, J. A.**, decomposition of a solution of potassium iodide by light, 1877, i., 577.  
 — estimation of glucose, 1880, A., 512.
- Battershall, J. P.**, new derivatives of naphthalene, 1873, 1138.
- Battistini, Attilio**. See *Aliphandro Moriggia*.
- Battut, M.**, conversion of waste animal charcoal, 1882, A., 1245.
- Baubigny, Henri**, the oxide of nickel  $\text{Ni}_3\text{O}_4$ , 1879, A., 299.  
 — action of hydrogen sulphide on nickel sulphate solution, 1882, A., 805.  
 — action of insoluble metallic sulphides on acid solutions of nickel sulphate in presence of hydrogen sulphide, 1882, A., 928.  
 — action of hydrogen sulphide on saline solutions of nickel and other metals of the same group, 1882, A., 1031.  
 — hydrogen nickel sulphide, 1882, A., 1032.  
 — action of hydrogen sulphide on nickel chloride, 1882, A., 1172.
- Baudet**, use of phenol in leather dressing, 1873, 206.
- Baudrimont, Alce. Ed.**, the composition of guanos, their alterations, and the probable origin of the fossil phosphates of the Lot district, 1873, 609.  
 — observations on viscous fermentation, 1875, 1285.  
 — influence of coloured light on the evaporation of water, 1879, A., 863.  
 — researches on beetroot, 1880, A., 495.
- Baudrimont, M. V. Ernest**, nature of the white spots which often appear on photographs, 1873, 424.  
 — crystallized sodium monosulphide, 1876, i., 39.  
 — action of potassium permanganate on potassium cyanide, 1880, A., 307.  
 — analysis of bismuth subnitrate, 1881, A., 196.
- Bauer, Alexander**, on the ammonia-soda process, 1874, 717.  
 — action of sulphuric acid on lead, 1875, 612.  
 — hard or toughened glass, 1876, i., 122.
- Bauer, Alexander**, and **Max Gröger**, new acid of the  $\text{C}_n\text{H}_{2n-4}\text{O}_6$  series, 1881, A., 394.
- Bauer, Alexander**, and **J. Schuler**, preliminary notice on the synthesis of pimelic acid, 1878, A., 291.
- Bauer, Emil**, on frothy fermentation, 1880, A., 518.
- Bauer, Harry R.**, compounds of alkaloïds with iodine, 1875, 466.
- Bauer, Joseph**, on tissue change in the animal body after blood letting, 1873, 644.
- Bauer, Joseph**. See also *Carl von Voit*.
- Bauer, Max**, seebachite a new zeolite from Victoria in Australia, 1874, 1067.  
 — the crystal system of potash mica, 1879, A., 24.  
 — the hydrohematite of Neuenbürg, 1879, A., 604.  
 — crystallization of cyanite, 1880, A., 614.  
 — kjerulfin, 1881, A., 366.  
 — barsowite, 1881, A., 375.  
 — parallel junction of different varieties of epidote, 1881, A., 379.  
 — asbestos containing sodium, 1882, A., 475.  
 — chemical composition of metaxite from Reichenstein, 1882, A., 481.

- Bauermann, Hilary**, an experiment for showing the electric conductivity of various forms of carbon, 1876, i., 332.
- Baumann, Eugen**, addition products of cyanamide, 1873, 1024; 1874, 367.
- formation of methylhydantoic acid, 1874, 578.
- synthesis of dicyanodiamidine, 1874, 793.
- a compound of sarcosine and guanidine, 1875, 146.
- sarcosine-uric acid, 1875, 146.
- dicyanodiamidine, 1875, 446.
- the formation of sulphurea from cyanamide, and its compound with silver chloride, 1875, 632.
- new formation of biuret, 1875, 1187.
- conjugated sulphuric acids in the organism, 1876, i., 726; ii., 212, 534.
- occurrence of pyrocatechin in urine, 1876, ii., 109.
- $\alpha$ -cresylsulphuric acid, 1877, i., 206.
- phenolsulphuric acids, 1877, i., 467.
- determination of sulphuric acid in urine, 1878, A., 682.
- hydrogen phenyl sulphate and similar derivatives of the phenols, 1879, A., 148.
- behaviour of phenol in the animal organism, 1879, A., 816.
- formation of hydro-*p*-coumaric acid from tyrosine, 1880, A., 254.
- aromatic products of the animal body, 1880, A., 648; 1882, A., 514.
- active oxygen, 1882, A., 691.
- phenylmercapturic acid, cystine and serine, 1882, A., 1282.
- Baumann, Eugen**, and **Ludwig Brieger**, formation of cresols during putrefaction, 1879, A., 789.
- *p*-cresol, 1879, A., 789.
- Baumann, Eugen**, and **Erwin Herter**, behaviour of phenols in the animal body, 1877, i., 486.
- Baumann, Eugen**, and **Ernst Immanuel Felie Hoppe-Seyler**, methylhydantoic acid, 1874, 466.
- Baumann, Eugen**, and **Friedrich Joseph (Freiherr) von Mering**, behaviour of sarcosine in the organism, 1875, 1044.
- Baumann, Eugen**, and **Christian Preusse**, bromophenylmercapturic acid, 1879, A., 893.
- oxidation and synthesis in the animal organism, 1879, A., 814.
- synthetic processes in the animal body, 1882, A., 756.
- Baumann, Eugen**, and **Ferdinand Tie-mann**, constitution of indigo, 1879, A., 806, 935.
- potassium hydrindigotin sulphate and potassium indoxyl sulphate, 1880, A., 475.
- Baumann, Eugen**. See also **E. Gergens, Reinhard von den Velden**.
- Baumert, Georg**, lupinine, 1881, A., 831.
- the lupin alkaloids, 1882, A., 229.
- action of sodium on lupinine, 1882, A., 873.
- anhydrolupinine, 1882, A., 873.
- Baumgarten, Paul**, researches on the causes of tuberculosis, 1882, A., 1120.
- Baumgartner, Georg**, experiments on evaporation, 1878, A., 6.
- Baumgartner, Georg**. See also **Leopold Pfandler**.
- Baumhauer, E. H. von**, diamonds, 1877, ii., 849.
- Baumhauer, Heinrich**, the structure of isomorphous crystals, 1873, 130.
- the affinity of bromine for oxygen, 1873, 1096.
- condensation during the formation of solid or fluid compounds, 1875, 417.
- etched figures on adular, albite, fluor spar, and sodium chlorate, 1877, ii., 116.
- leucite, 1878, A., 385.
- signification of the rhombohedral and prismatic planes in quartz, 1878, A., 390.
- "etch figures" on quartz crystals, 1879, A., 439.
- artificial calespar twins, according to  $\frac{1}{2}$  R., 1881, A., 397.
- boracite, 1881, A., 397.
- perovskite, 1881, A., 398.
- note on mica, especially zinnwaldite, 1881, A., 692.
- Baumstark, Ferdinand**, a new constituent of urine, 1873, 1242; 1875, 252.
- cholic acid, 1874, 162.
- cholic acid and protein compounds, 1874, 257.
- singular formation of an ethidene-compound, 1875, 140.
- colouring matter from a pathological urine, 1875, 279.
- two pathological urine pigments, 1875, 480.
- Baur, Albert**, dimethyl-*p*-phenylene-diaminethiocarbamide, 1879, A., 628.
- Baur, Albert**. See also **Richard E. Meyer**.
- Baur, Jacob**, *Hydrangea arborescens*, 1881, A., 916.

- Bavaria, Carl Theodor (Duke) of**, influence of the temperature of the surrounding air on the excretion of carbonic acid, and the absorption of oxygen in a cat, 1879, A., 74.  
 — influence of the surrounding temperature on the tissue metamorphosis of warm-blooded animals, 1879, A., 951.
- Baxeres de Torres, Joseph de, and Alexis Drouin**, treating iron ores containing silver and copper, 1879, A., 496.
- Bay, H.**, preservation of butter, 1880, A., 932.
- Bayer, K. J.**, estimation of wool in yarn, 1877, i., 349.
- Bayley, Thomas**, the behaviour of metallic solutions with filter paper, and on the detection of cadmium, 1878, T., 304.  
 — colour relations of copper and its salts, 1878, A., 377.  
 — analysis of alloys containing copper, zinc and nickel, 1879, A., 485.  
 — catalysis, 1879, A., 501.  
 — complex oxides of cobalt and nickel, 1879, A., 507.  
 — on the reflection from copper, and on the colorimetric estimation of copper by means of the reflection euprimer, 1880, T., 418, 828.  
 — on the colour properties, and colour relations of the metals of the iron-copper group, 1881, T., 362.  
 — preparation of potassium hydrogen saccharate, 1881, A., 580.  
 — connection between the atomic weight and the chemical and physical properties of elements, 1882, A., 359.
- Bayne, James**. See **Edmund Neison** (now **Edmund Neville Nevill**).
- Bazault, Fernand Guy, and Isidore Jules Roche**, new process for the manufacture of steel, 1873, 418.
- Beamer, Miles, and Frank Wigglesworth Clarke**, aniline salts, 1879, A., 785.  
 — lithium picrate, 1879, A., 789.
- Beaumetz, Dujardin**. See **Dujardin-Beaumetz**.
- Béchamp, Antoine**, observation on Pasteur's paper on the theory of alcoholic fermentation, 1873, 294.  
 — spontaneous alcoholic and acetic fermentation of the liver: physiological alcohol in human urine, 1873, 399.  
 — the function and transformation of Fungi, 1873, 401.
- Béchamp, Antoine**, physiological theory of alcoholic fermentation by beer yeast, 1873, 405.  
 — alcohol and acetic acid normally present in milk as products of the functions of microzymes, 1873, 763.  
 — on the normal microzymes of milk, as the cause of its spontaneous coagulation, and on the alcoholic, acetic, and lactic fermentation of that liquid, 1873, 927.  
 — "glairin" from the springs at Molitg, 1873, 1149.  
 — proteids, 1874, 379.  
 — new researches on the physiological exhaustion of beer yeast, 1874, 599.  
 — the colouring matter of blood, 1874, 811; 1875, 174.  
 — casein and albumin, 1874, 993.  
 — the albumins of white of egg, 1875, 92.  
 — on the optically active substances besides glucose, which exist in wine and are characteristic of it, 1875, 748.  
 — reply to a note by Gayon on spontaneous changes in eggs, 1875, 1210.  
 — the microzymes of germinated barley and of sweet almonds as producers of diastase and synaptase, 1877, i., 106.  
 — detection of fuchsine and other colouring matters, 1877, i., 749.  
 — new researches on the function of Fungi and their property of inverting cane sugar, 1878, A., 441.  
 — formation of carbonic anhydride, alcohol, and acetic acid by yeast alone, in presence, and absence of oxygen, 1879, A., 663.  
 — influence of oxygen on alcoholic fermentation, 1879, A., 735.  
 — non-identity of the soluble albuminoids of crystallin with those of white of egg and serum, 1880, A., 815.  
 — formation of chloroform from alcohol and bleaching powder, 1881, A., 566.  
 — viscose, 1881, A., 1024.  
 — origin and rôle of certain microzymes, 1882, A., 544.  
 — microzymes of the gastric juice, 1882, A., 752.  
 — report on a memoir on albuminoids, 1882, A., 981.  
 — microzymes of the gastric glands and their digestive power: answer to the question, "Does the stomach digest itself?" 1882, A., 1118.  
 — gastric microzymes and pepsin, 1882, A., 1118.



- Béchamp, Antoine**, and **Alfred Estor**, observation on Pasteur's paper on the function of salts as agents of fermentation under certain circumstances, 1873, 294.
- transformation of bacteria into microzymes, and of microzymes into bacteria, in the alimentary canal of animals, 1873, 1048.
- Béchamp, Antoine**, and **G. Eustache**, on certain modifications of the substance of eggs determined by fungoid growths from without, 1878, A., 83.
- Béchamp, Joseph**, on the microzymes of an animal at different ages, 1876, i., 94.
- the determination of glucose and dextrin in fermented liquids, and on the influence of albuminoid matters, and the products of their alteration, on the reduction of the cupro-potassic reagent, 1876, i. 762.
- on a remarkable case of the reduction of nitric acid and oxidation of acetic acid, with production of alcohol, by the influence of certain microzymes, 1876, ii., 540.
- action of anhydrous acids on anhydrous bases, 1878, A., 108.
- nature of the albumins in hydrocele, 1879, A., 550.
- presence of alcohol in animal tissues during life and after death, 1880, A., 174; 1881, A., 928.
- substances analogous to the ptomaines in digested albuminoid matters, 1882, A., 1115.
- pancreatic albuminoids, 1882, A., 1119.
- Béchamp, Joseph**, and **E. Baltus**, modification effected by the animal organism on various albuminoid substances when injected into the veins, 1879, A., 334.
- Bechi, Emilio**, the proper time for pressing olives, 1879, A., 1080.
- Bechi, Guido de**, succinyl compounds of the toluidines, 1879, A., 461, 527.
- new mode of formation of ketones, 1879, A., 529.
- solubilities of some constituents of coal tar, 1880, A., 258.
- Bechler, Martin**, cymene mercaptan and researches on the constitution of thymol, 1874, 471.
- Beck, Carl**. See **Jules Piccard**, **Wilhelm Staedel**.
- Beck, Wilhelm von**, newly-discovered deposit of silver ores in the Troitzker district of the Government of Orenburg, 1876, ii., 49.
- Becke, Friedrich Johann**, the crystal forms of tin-stone, 1878, A., 709.
- crystallised vivianite in animal bones out of the Laibach peat-bog, 1878, A., 710.
- twin formation and optical properties of chabazite, 1881, A., 398.
- hypersthene from Bodenmais, 1881, A., 539.
- Becke, W. von der**, saponification of fats, 1880, A., 762.
- Becker, Armand**, optical rotatory power of asparagine and aspartic acid in different solvents, 1881, A., 801.
- Becker, Franz**, some compounds of tellurium, 1876, ii. 45.
- estimation of antimony, 1878, A., 753.
- undecylenic acid, 1878, A., 853.
- Becker, Franz**. See also **Friedrich Krafft**.
- Becker, George F.**, reduction of weighings in air in chemical analysis to the vacuum, 1879, A., 396.
- Becker, Heinrich**, *s*-nitrotoluidine, 1882, A., 1197.
- Becker, K.**, creaming by the aid of heat, 1882, A., 124.
- Becker, Paul**. See **Carl Arnold August Michaelis**.
- Beckert, Theodore F.**, the relative value of colchicum root, 1877, ii., 915.
- Beckett, George Henry**, and **Charles Romley Alder Wright**, action of the organic acids and their anhydrides on the natural alkaloids. Part II., Butyryl and benzoyl derivatives of morphine and codeine, 1875, 15.
- action of the organic acids and their anhydrides on the natural alkaloids. Part III., Action of acetic anhydride on the polymerides of codeine and morphine, 1875, 312.
- on narcotine, cotarnine and hydrocotarnine, 1875, 573; 1876, i., 164, 281, 461.
- on the action of the organic acids and their anhydrides on the natural alkaloids. Part IV., Action of polybasic acids on morphine and codeine, 1875, 689.
- notes on the sulphates of narcine, and on other narcine derivatives, 1875, 699.
- the alkaloids of the aconite roots, 1875, 1265.
- isomeric terpenes and their derivatives, 1876, i., 1.
- action of organic acids and their anhydrides on the natural alkaloids. Part V., Action of acetic

- anhydride on opium bases, 1876, i., 652.
- Beckh, G.**, action of light on beer, 1882, A., 122.
- Beckhusen, (Fran) H.**, results of fattening calves with skimmed milk, 1881, A., 297.
- Beckmann, Ernst**, barium aluminate and basic halogen salts of barium, 1882, A., 141.
- Beckmann, Ernst Otto**, oxidation products of diethyl sulphide and analogous compounds, 1879, A., 37.
- Beckmann, Julius**, derivatives of benzophenone, 1874, 156; 1876, i., 583.
- Beckurts, Heinrich**, *m*-amidobenzene-sulphonic acid, and bromobenzene-sulphonic acids, 1876, ii., 304.
- action of chlorine on acetonitrile, 1877, i., 297.
- action of sulphuric acid on toluene, 1877, ii., 774.
- magnesium carbonates, 1882, A., 13.
- composition and examination of rum, 1882, A., 102.
- separation of ptomaines from plant alkaloids, 1882, A., 1006.
- Beckurts, Heinrich, and Robert Otto**, action of alkalis on the chlorinated acetonitriles, 1877, i., 297.
- $\alpha$ -monochloropropionitrile, 1877, i., 297.
- constitution of dichloropropionitrile, 1877, i., 298.
- a simple method of obtaining propionic acid from propionitrile, 1877, ii., 179.
- on the dichloropropionic acids formed from dichloropropionitrile, 1877, ii., 180.
- conversion of  $\alpha$ -dichloropropionic acid into monochloroacrylic and pyruvic acids, 1877, ii., 181.
- solid dichloropropionitrile, 1877, ii., 182; 1878, A., 285.
- direct conversion of nitriles into compound ethers, 1877, ii., 874.
- action of "molecular" silver upon  $\alpha$ -dichloropropionic acid, 1878, A., 290.
- $\alpha$ -dichloropropionic acid, 1878, A., 290.
- $\alpha$ -monochloroacrylic acid from  $\alpha$ -dichloropropionic acid, 1878, A., 291.
- formation of  $\alpha$ -dichloropropionic acid from pyruvic acid, 1878, A., 488.
- sulphuric monochloride and dichloride, 1879, A., 200.
- Beckurts, Heinrich, and Robert Otto**, mode of action of sulphuric monochloride, 1879, A., 229.
- synthesis of aromatic sulphones, 1879, A., 242.
- action of heat and water on the halogen substituted acids of the  $C_nH_{2n}O_2$  series, 1881, A., 574.
- Beckurts, Heinrich.** See also **Robert Otto**.
- Becquerel, Antoine César**, phenomena produced by molecular attraction in capillary spaces, 1873, 1185.
- on the mode of intervention of water in chemical actions, and on the relations existing between affinity and electromotive force, 1874, 218.
- on chemical dynamics, 1874, 944.
- on chemical actions in capillary spaces, 1874, 1126.
- action of battery currents in conjunction with electrocapillary currents, 1875, 328.
- physico-chemical forces in vital phenomena, 1875, 372.
- researches on the operation of electrocapillary forces in the phenomena of nutrition, 1875, 528.
- electrocapillary actions, 1875, 529; 1877, ii., 820.
- on the elements of organised structures considered as electromotors, 1876, i., 278.
- on the affinities of two solutions measured by the electromotor force which they generate, 1876, i., 333.
- measurement of the affinities between the liquids of organised bodies by means of electromotive force, 1876, i., 511.
- Becquerel, Alexandre Edmond**, observations respecting E. Marehand's communication on the measurement of the chemical forces contained in sunlight, 1874, 942.
- action of differently refrangible rays on iodide and bromide of silver, 1875, 30.
- observation of the ultra-red portion of the spectrum by means of phosphorescent substances, 1876, ii., 587.
- on a note by Lamansky on Stokes's law, 1879, A., 862.
- Becquerel, Alexandre Edmond, and Henri Becquerel**, temperature of the soil under snow, 1881, A., 934.
- Becquerel, Henri**, magnetic rotatory polarisation, 1875, 1149.
- magnetic rotatory power of gases at ordinary temperature and pressure, 1879, A., 576.

- Bequerel, Henri**, specific magnetism of ozone, 1881, A., 340.  
 — magnetism of the nickeliferous iron of Santa Catarina in Brazil, 1882, A., 369.
- Bedall, C.**, koussin, 1874, 702.
- Bedall, Karl**, and **Otto Fischer**, hydroxyquinoline, 1881, A., 613.  
 — quinoline, 1882, A., 412.  
 —  $\alpha$ -hydroxyquinoline, 1882, A., 869.
- Bedoin**, antiseptic properties of borax, 1876, ii., 543.
- Bedson, Peter Phillips**, on some compounds of ether with anhydrous metallic chlorides, 1876, i., 309.  
 — on two isomeric bromonitrophenylacetic acids, 1877, ii., 482.  
 — three isomeric bromamidophenylacetic acids, 1878, A., 70.  
 — on some derivatives of phenylacetic acid, 1880, T., 90.
- Bedson, Peter Phillips**, and **Alfred John King**, acetyl-*o*-amidobenzoic acid, 1880, T., 752.
- Bedson, Peter Phillips**, and **William Carleton Williams**, determination of the specific refraction of solid bodies in solution, 1882, A., 351.
- Beesley, Thomas**, apparatus for gas analysis, 1874, 386.
- Beetz, Wilhelm von**, function of peroxides in the galvanic battery, 1875, 222.  
 — voltaic polarisation of aluminium, 1876, ii., 267.  
 — electrochemical action on an aluminium anode, 1878, A., 2.  
 — excitation of electricity by the contact of solid and gaseous bodies, 1879, A., 345.  
 — electric conductivity of zinc sulphate solution, 1879, A., 864.  
 — conductivity of liquids for heat, 1879, A., 1001.  
 — galvanic polarisation, 1880, A., 837.  
 — the strict meaning of galvanic polarisation, 1881, A., 490.  
 — elasticity and electric conductivity, 1881, A., 776.
- Beghin**, and **Ch. Mène**, analysis of a coal from the Island of Suderö, 1876, ii., 56.
- Behagel von Adlerskron**. See **Adlerskron**.
- Behr, Arno**, sulphobenzophenone and a product of the distillation of barium benzoate, 1873, 276.  
 — aconitic acid in the juice of the sugar-cane, 1877, ii., 182.
- Behr, Arno**, crystallised anhydrous grape-sugar, 1882, A., 706.
- Behr, Arno**, and **Willem Arne van Dorp**, acenaphthene and naphthalic acid, 1873, 632; 1874, 1167.  
 — action of heated lead oxide on organic bodies, 1873, 1135.  
 — constitution of anthracene, 1874, 470.  
 — action of lead oxide on phenol, 1874, 798.  
 — conversion of  $\beta$ -benzoylbenzoic acid into anthraquinone, 1874, 803.
- Behrend, Paul**, convenient method of preparing sulphuryl chloride, 1876, i., 878.  
 — action of sulphuryl chloride on alcohols, 1877, i., 182; ii., 287.  
 — action of sulphuric monochloride on alcohols, 1880, A., 310.
- Behrend, Paul**, and **August Morgen**, changes effected by fermentation in the nitrogenous constituents of sweet mash, 1880, A., 357.  
 — growth of beets, 1880, A., 502.  
 — influence of fermentation on the nitrogenous constituents of potato mash, 1880, A., 819.
- Behrend, Paul**, **Max Heinrich Märcker**, and **August Morgen**, estimation of starch in potatoes, 1880, A., 513.
- Behrend Paul** (and others), milk analysis, 1880, A., 925.
- Behrend, Robert**, action of sulphuryl chloride on dimethylamine, 1881, A., 716.  
 — action of sulphuryl chloride on dimethylamine hydrochloride, 1882, A., 164.  
 — dimethylsulphaminic acid, 1882, A., 1282.  
 — substituted sulphamides and amidosulphuryl chloride, 1882, A., 1282.
- Behrens, E. A.**, on coal-tar and pitch, 1873, 419.
- Behrens, Theodor Heinrich**, on porcelain and some allied products of devitrification, 1874, 544.  
 — the spectrum of noble opal, 1874, 557.
- Beilstein, Fedor F.**, metallic derivatives of cyanamide, 1874, 147.  
 — potassium salts, 1874, 822.  
 — manufacture of soda, 1874, 824.  
 — recovery of manganese from manganese liquors, 1874, 830.  
 —  $\beta$ -dichlorobenzoic acid, 1875, 1194.  
 — note on chlorosalicylic acid, 1875, 1195.

- Beilstein, Fedor F.**, dichlorobenzoic acid, 1876, i., 252, 587.  
 ——— action of chlorine on *m*-chlor-acetanilide, 1878, A., 585.  
 ——— separation of zinc from nickel, 1879, A., 276.  
 ——— perchlorophenol chloride, 1879, A., 463.  
 ——— dinitro-*p*-toluidine, 1880, A., 635.  
 ——— St. Petersburg rhubarb, 1882, A., 1126.  
**Beilstein, Fedor F.**, and **Ludw. Jawein**, treatment of Bunsen's cells, 1879, A., 576.  
 ——— estimation of zinc, 1879, A., 672.  
 ——— estimation of cadmium, 1879, A., 746.  
 ——— new methods of separating manganese and iron, 1880, A., 61, 289.  
 ——— valuation of zinc and zinc dust, 1880, A., 826.  
 ——— determination and separation of metals, 1882, A., 97.  
**Beilstein, Fedor F.**, and **Alfons von Kuhlberg**, trinitronaphthalenes, 1873, 69, 1138.  
 ——— oxybenzoic acid, 1873, 72.  
 ——— nitronaphthalenes, 1874, 159.  
**Beilstein, Fedor F.**, and **Alexander Kupffer**, cymene, 1874, 152.  
 ——— oil of wormwood, 1874, 153.  
 ——— eumic acid, 1874, 161.  
**Beilstein, Fedor F.**, and **Apollo Kurbatoff**, conversion of the isomeric chloranilines into the corresponding chlorophenols and chlorobenzoic acids, 1874, 806.  
 ——— action of iodine on an alcoholic solution of chlorophenylcarbamide, 1874, 1097.  
 ——— connection between the substituted benzenes and phenols, 1875, 362.  
 ——— isomeric dichlorobenzenes, 1875, 450.  
 ——— phenol and amido-derivatives, 1875, 1037.  
 ——— chlorophenylie mustard oil (chlorophenylsulphocarbimide) and its derivatives, 1875, 1200.  
 ——— chloronitrobenzene, 1876, i., 391.  
 ——— dichlor- and trichlor-aniline, 1876, i., 712; 1878, A., 299.  
 ——— tetrachlorobenzene, 1876, ii., 294.  
 ——— on chloronitranilines, 1876, ii., 308; 1879, A., 309.  
 ——— substitution in benzene, 1876, ii., 631.  
**Beilstein, Fedor F.**, and **Apollo Kurbatoff**, chlorinated anilines, 1877, i., 473.  
 ——— chlorinated derivatives of benzene, 1877, i., 706.  
 ——— action of sulphuretted hydrogen on certain nitro-compounds, 1878, A., 139; 1879, A., 230.  
 ——— dichloranilines, 1878, A., 299.  
 ——— nitration products of *s*-dichloraniline, 1878, A., 974.  
 ——— chloranilines, 1879, A., 143.  
 ——— formation of chlorophenylene-diamine, 1879, A., 144.  
 ——— dinitrochlorobenzene, 1879, A., 376.  
 ——— nitrophthalic acid obtained by oxidation of nitronaphthalene, 1879, A., 644.  
 ——— oxidation of nitronaphthalene, 1879, A., 722.  
 ——— oxidation of bromonaphthalene, 1879, A., 807.  
 ——— dinitrobenzoic acid, 1880, A., 471.  
 ——— dinitronaphthalene, 1880, A., 477.  
 ——— hydrocarbons from American petroleum, 1881, A., 159.  
 ——— nature of Caucasian petroleum, 1881, A., 159, 1020.  
 ——— oxidation of  $\alpha$ - and  $\beta$ -dinitronaphthalene by nitric acid, 1881, A., 435.  
 ——— constitution of naphthalene derivatives, 1882, A., 62.  
**Beilstein, Fedor F.**, and **Eugen Wiegand**, preparation of propylene, 1882, A., 1038.  
 ——— propylene bromide, 1882, A., 1038.  
 ——— isodibromosuccinic acid, 1882, A., 1051.  
 ——— some reactions of ethylene bromide, 1882, A., 1179.  
 ——— angelica oil, 1882, A., 1300.  
**Beins, Hendrik**, preparation of carbonic anhydride under any desired pressure, 1879, A., 676.  
**Beketoff, Nikolai N.**, the action of hydrogen on silver nitrate, 1875, 425.  
 ——— determination of the atomic heat of hydrogen in its combination with palladium, 1879, A., 590.  
 ——— heat of hydration of sodium oxide and the action of sodium hydroxide and of hydrogen on sodium oxide, 1879, A., 689.  
 ——— combination of sodium oxide with carbonic anhydride, and action of sodium on mercuric oxide, 1881, A., 348.



- Belani, Eduard**, distribution of carbon in Bessemer steel, 1873, 953.  
 — combustibility of blast-furnace gases, 1877, ii., 376.
- Beletzky**, decomposition of phosphorite by peat, 1881, A., 457.
- Belgrand, Eugène**, action of water on lead pipes, 1874, 231.
- Bell, Charles John**, action of phosphorus pentachloride on saccharic acid, 1879, A., 917.
- Bell, Chichester Alexander**, reduction of nitrobenzanilide, 1874, 900.  
 — benzonitrotoluidide, 1875, 370.  
 — the action of reducing agents upon the nitranilides of salicylic acid, 1875, 1201.  
 — potassium cyanate and urea, 1876, i., 68.  
 — an ethyl derivative of pyrrol, 1876, ii., 630.  
 — pyrrol derivatives, 1879, A., 525.  
 — action of zinc on succinimide, 1880, A., 630.
- Bell, Chichester Alexander**, and **Edwin Lapper**, dry distillation of ammonium salts of saccharic acid, 1879, A., 524.
- Bell, Chichester Alexander**, and **Frank Litherland Teed**, on a simple method of determining vapour densities in the barometric vacuum, 1880, T., 576.
- Bell, Chichester Alexander**. See also **Charles W. Watts**.
- Bell, Henry S.**, manufacture of crucible steel, 1879, A., 1076.
- Bell, (Sir) Isaac Lowthian**, on the use of calcined lime as a flux in the blast-furnace, 1876, i., 791.  
 — separation of carbon, silicon, sulphur, and phosphorus in the refining and puddling furnace and in the Bessemer converter, 1878, A., 95; 1879, A., 185.
- Bell, J. Carter**, estimation of water in paraffin residues and crude paraffin, 1875, 104.  
 — detection of alum in flour, 1877, ii., 510.  
 — milk analysis, 1877, ii., 941.  
 — iodic acid as a test for morphine, 1880, A., 68.  
 — analysis of grape juices and unfermented and other wines, 1882, A., 81.
- Bell, James Wilson**, obituary notice of, 1880, T., 257.
- Bellamy, Felix**, the migration of gases, 1877, i., 32.  
 — estimation of gases dissolved in water, 1878, A., 91.
- Bellamy, Felix**. See also **G. Lechartier**.
- Bellati, Manfredo**, and **Riccardo Romanese**, thermic properties of some double iodides, 1881, A., 217.
- Belli, Ludwig**. See **Emil Erlenmeyer**, **Otto Wallach**.
- Bellucci, Giuseppe**, on the supposed development of ozone from plants, 1874, 596.  
 — action of sulphur on calcium carbonate, 1875, 131.  
 — supposed presence of hydrogen peroxide in the juice of plants, 1876, i., 954; 1879, A., 665.  
 — production of ozone by the pulverisation of water, 1877, i., 43.  
 — decolorising properties of hydrogen sulphide, 1882, A., 781.
- Bélohoubek, Antonín**, preparation of pressed yeast as a bye-product from potato spirit, 1879, A., 843.  
 — preparation of propylene glycol from glycerol, 1880, A., 232.  
 — analysis of Bohemian tea, 1881, A., 131.
- Bélohoubek, August**, correction of an erroneous statement concerning the preparation of chloroform, 1873, 364.
- Bemmelen, Jacobus Martinus van**, on Marx's (Goppelsröder's) method of estimating nitric acid in well-water, 1873, 90.  
 — the absorptive power of the soil, 1878, A., 598; 1879, A., 339, 552.  
 — condition of alkaline phosphates in aqueous solutions, 1880, A., 2.  
 — chemical composition of certain hydrated oxides, 1880, A., 849.  
 — compounds of some solid hydrated dioxides with acids, salts and alkalis, 1882, A., 571.
- Bénard, and Jean Pierre Louis Girardin**, estimation of gluten in flour, 1881, A., 1177.
- Bender, August**, estimation of the oxygen in decarburised Bessemer iron before addition of spiegeleisen; mode of action of the spiegeleisen, 1873, 298.
- Bender, Carl**, the Liebfrauensee of Kissingen, 1873, 359.  
 — the gas contained in apples, 1875, 661.  
 — gas from the pods of *Colutea arborescens*, 1876, i., 955.
- Bender, Georg**, action of ethyl chloro-carbonate on phenols, 1881, A., 48.  
 — preparation of *p*-amidostyrene and *p*-coumaric acid from *p*-nitrocinnamic acid, 1882, A., 201.
- Bender, R.**, on some mineral-springs in the neighbourhood of Lake Laach, 1878, A., 18.

- Bender, R.**, analysis of alloys employed as stopping for teeth, 1879, A., 1076.
- Bendix, Josef**, derivatives of *o*-nitrophenol, 1879, A., 314.
- Benecke**, amount of cholesterol in the human brain, 1882, A., 78.
- Benedikt, Rudolf**, products of the distillation of sugar with lime, 1873, 490.
- monobasic calcium saccharate, 1873, 876.
- phloroglucin, 1874, 894.
- salts of boric acid, 1874, 1134.
- action of iodine and mercuric oxide on *m*-amidobenzoic acid, 1875, 894.
- phlorein, kematein, and brasilein, 1876, i., 250.
- monethyl- and diethyl-pyrogallol, 1876, i., 916.
- action of nitric acid on tribromophloroglucin, 1877, ii., 193.
- maclurin, 1877, ii., 496.
- action of bromine on phloroglucin, 1877, ii., 891; 1878, A., 499.
- mononitropyrocatechin, 1878, A., 575.
- pentabromoresorcinol, 1879, A., 55, 164.
- trinitroso- and trinitro-phloroglucin, 1879, A., 57.
- tribromophenol bromide and tribromoresorcinol bromide, 1879, A., 717.
- bromoxyl derivatives of benzene, 1880, A., 246.
- Benedikt, Rudolf**, and (*Baron*) *A. von Hübl*, dinitro- and trinitro-resorcinol, 1881, A., 1132.
- Benedikt, Rudolf**. See also *Philipp Weselsky*.
- Benevides, E.**, on the flames of compressed gases, 1873, 590.
- Benker**. See *Lasne*.
- Bennert, Carl**. See *Richard Anschütz*.
- Bennett, Jos.**, new tests for anthracene, 1877, i., 748.
- Bennett, William Zebina**, and *Henry Barker Hill*, dichloroacrylic acid, 1879, A., 616.
- Bennewitz, P. G.**, amido- and diazo-phenylsulphuric acids, 1874, 374.
- Bennewitz, P. G.** See also *Rudolf Wilhelm Schmitt*.
- Benoist, Lucien**. See *Pierre Miquel*.
- Benoit**, estimation of phosphates, 1876, i., 109.
- Benoit, René**, on the electric resistance of metals, 1873, 832.
- Benrath, Hermann Eugen Isaak**, Glauber's salt in soda used for making glass, 1873, 540.
- Benrath, Hermann Eugen Isaak**, preparation of an enamel suitable for frosted glass-making, 1873, 1171.
- composition of pressed glass, 1876, i., 789.
- Macagno's investigations on bottle-glass, 1879, A., 562.
- silvering glass, 1882, A., 127.
- Ben-Saude, Alfredo**, analcime, 1882, A., 285.
- Bente, Friedrich**, preparation of levulinic acid, 1875, 1005; 1877, i., 65.
- constitution of fir and poplar wood, 1876, i., 421.
- on the preparation of levulinic acid, and on Caragheen sugar, 1877, i., 65.
- a cheap gas blowpipe, 1877, ii., 275.
- Bente, Friedrich**. See also *Hans Hübner*.
- Benz, George**, amidoethylbenzene and ethyl-*o*-amidotoluene, 1882, A., 1284.
- Benzinger, Eduard**, derivatives of phosphenylic acid, 1875, 1205.
- Benzinger, Eduard**. See also *Hermann Kaemmerer, Carl Arnold August Michaelis*.
- Béran, Alfr.** See *Casimir Wurster*.
- Berend, Ludwig**, isodulcite, 1879, A., 40.
- quinoline derivatives, 1882, A., 530.
- Berendes, Johannes**. See *Ernst Albert Schmidt*.
- Berg, Henrik**. See *Johan Peter Claësson*.
- Berg, John Vilhelm**, detection of blood in dilute solutions, 1874, 608.
- Berg, Paul von**, estimation of boric acid by baryta, 1877, i., 736.
- Berg, Paul von**. See also *George Thoms*.
- Berger**, observations on Leidenfrost's phenomenon, 1873, 242.
- Berger, Franz**, *o*-toluidineguanidines and their cyanogen derivatives, 1880, A., 214.
- aromatic guanidine compounds, 1880, A., 802.
- action of acetamide on phenyl cyanamide, 1881, A., 810.
- Berger, J.**, sulphuretted derivatives of cymene, 1877, ii., 601.
- ethers of terephthalic acid, 1878, A., 152.
- Bergeret**. See *Mayençon*.
- Bergeron, Georges**, and *Louis Désiré L'Hôte*, presence of copper in the animal organism, 1875, 477.
- Berggren, A. E.**, conductivity of electrolytes, 1878, A., 101.

- Berglund, Emil**, double sulphites, 1874, 771.  
 — amidosulphonic acid, 1876, ii., 44; 1877, ii. 111; 1878, A., 643.
- Bergmann, A.**, Ziemann's process for the manufacture of butter and cheese, 1881, A., 952.
- Bergmann, Franz**. See *Heinrich Fresenius*.
- Berlien, Joachim Emil**, purification of spirit, 1880, A., 931.
- Bernard, Claude**, critical experiments on the formation of sugar in the blood, 1877, i., 485.  
 — the formation of sugar in the liver, 1878, A., 82.
- Bernard, Claude**, and *L. Ehrmann*, on a quick method of estimating lime in presence of magnesia, and on the application of magnesia to the defecation of sugar liquors, 1877, i., 343.
- Bernard, J.** See *Ch. Livon*.
- Bernbeck, C.**, testing butter, 1876, i., 765.  
 — flour rendered uneatable by free fatty acids, 1882, A., 123.  
 — improved mode of preparing violet syrup, 1882, A., 248.
- Berndsen, Alfred Wilhelm Theodor**,  $\alpha$ -amidobenzenesulphonic acids, 1875, 1028.
- Berndsen, Alfred Wilhelm Theodor**, and *Heinrich Limpricht*,  $\gamma$ -amidobenzenesulphonic acid, 1875, 1029.
- Bernhardt, W.**, alkaloid in *Acthusa Cynapium*, 1880, A., 899.
- Bernheimer, Oscar**, organic ferricyanogen compounds, 1879, A., 611.  
 — products from the roasting of coffee, 1881, A., 287; 1882, A., 230.  
 — organic nitroprussides, 1881, A., 883.  
 — transformation products of glutaric or *n*-pyrotartaric acid, 1882, A., 1189.
- Bernthsen, Heinrich August**, derivatives of toluic acid, 1875, 1025.  
 — on a base from  $\alpha$ -toluic acid corresponding with acediamine, 1876, i., 607.  
 — amidines of monobasic organic acids, 1876, ii., 95; 1878, A., 788; 1879, A., 922.  
 — thiamides of monobasic organic acids, 1877, i., 616; 1878, A., 70.  
 — an isomeride of benzenyldiphenylamidine, 1877, ii., 886.  
 — action of nascent hydrogen upon thiobenzamide, 1877, ii., 887.  
 — action of phosphorus pentasulphide on acid amides, 1878, A., 585.
- Bernthsen, Heinrich August**, amidines and thiamides of monobasic organic acids, 1878, A., 788; 1879, A., 922.  
 — history of phenylacetamide, 1880, A., 650.  
 — action of phosphorus pentachloride and of zinc dust on succinimide, 1880, A., 713.  
 — use of sodium hyposulphite,  $\text{Na}_2\text{SO}_3$ , in the estimation of copper, of indigo, and of oxygen dissolved in water, 1881, A., 310.  
 — composition of sodium hyposulphite, 1881, A., 508, 976; 1882, A., 465.  
 — nomenclature of carbonic acid derivatives, 1882, A., 381.  
 — postscript to the article on tetraphenylthiocarbamide by Bernthsen and Friese, 1882, A. 1299.
- Bernthsen, Heinrich August**, and *Adalbert Drews*, titration of hyposulphite with indigo and carmine, 1881, A., 310.
- Bernthsen, Heinrich August**, and *Georg Friese*, *n*-dithiourethanes, 1882, A., 966.  
 — tetraphenylthiocarbamide, 1882, A., 1089.
- Bernthsen, Heinrich August**, and *Heinrich Conr. Klinger*, sulphine compounds of thiocarbamide, 1878, A., 569; 1879, A., 650.
- Bernthsen, Heinrich August**, and *F. Szymanski*, formation of diamines, 1880, A., 639.
- Bernthsen, Heinrich August**, and *Hugo Trompeter*, amidines and thiamides of monobasic organic acids, 1879, A., 146.
- Berry, R. A.**, hydrated barium nitrate, 1882, A., 13.
- Bersch, Josef**, cultivation of pure beer yeast, 1879, A., 1046.  
 — preservation of must by means of salicylic acid, 1882, A., 1010.  
 — gelatinised grain for brewing, 1882, A., 1337.
- Bersch, W.**, enamelled cast iron vessels, 1880, A., 833.
- Bert, Paul**, experimental researches on the influence of barometric changes on the phenomena of life, 1873, 643, 762, 1249.  
 — influence of barometric changes on the phenomena of vegetable life, 1873, 1250.  
 — quantity of oxygen which can be absorbed by the blood under various atmospheric pressures, 1875, 656.

- Bert, Paul**, influence of compressed air on fermentation, 1876, i., 93.  
 — employment of compressed oxygen in physiological investigations, 1878, A., 236.  
 — action of oxygen on anatomic elements, 1878, A., 594.  
 — region of the solar spectrum which is indispensable to vegetable life, 1879, A., 336.  
 — richness in oxygen of the blood of animals living in elevated regions, 1882, A., 1120.
- Bert, Paul**, and **Paul Regnard**, action of hydrogen dioxide on ferments, &c., 1882, A., 1122.
- Bertels, G. A.**, isenite a new volcanic rock, 1875, 548.  
 — constitution of basic salts, 1875, 1237.
- Berthelot, Marcellin (Pierre Eugène)**, observations on the mercury calorimeter, 1873, 132.  
 — the state of salts in solutions, 1873, 236.  
 — the statics of saline solutions, 1873, 468.  
 — barium ethylate and the formation of propionic acid from carbon monoxide, 1873, 614; 1874, 246.  
 — on the heat disengaged in the reaction between hydracids and water, and on the molecular volume of solutions, 1873, 715.  
 — the constitution of the hydracids in solution and their inverse reactions, 1873, 835.  
 — calorimetric researches on the state of bodies in solutions, 1873, 838.  
 — sulphovinic acid and its salts, 1873, 869.  
 — on the heat disengaged in the reactions between water and the hydrates of potassium and sodium, 1873, 999.  
 — heat evolved in the reactions of chlorine and its compounds, 1873, 1094.  
 — action of water on the alkalis and alkaline salts; constitution of alkaline solutions, 1873, 1096.  
 — heat of combustion of formic acid, 1873, 1099.  
 — on the reciprocal displacements of the hydracids, 1873, 1192.  
 — some calorimetric problems and values, 1874, 117.  
 — on the nature of the chemical elements; observations with reference to Lockyer's paper, 1874, 426.  
 — new researches on the oxides of nitrogen, 1874, 439.
- Berthelot, Marcellin (Pierre Eugène)**, heat evolved in various reactions of the oxides of nitrogen, 1871, 410.  
 — the crystalline hydrates of sulphuric acid, 1874, 761.  
 — thermic phenomena of the reaction of water with nitric acid, 1874, 762.  
 — the heat liberated by chemical reactions, 1874, 862.  
 — preparation of nitric anhydride, 1874, 868, 1057.  
 — titration of potassium permanganate solutions, 1874, 918, 1179.  
 — note on freezing mixtures, 1874, 945.  
 — researches on solution, 1874, 948.  
 — new contributions to the history of carbon, graphite, and meteorites, 1874, 950.  
 — ammonium nitrite, 1874, 961, 1058.  
 — thermic researches on the alkaline sulphides, 1874, 962.  
 — formation of acetylene by the dark discharge, 1874, 974.  
 — thermochemistry of the metallic sulphides, 1874, 1048.  
 — the cohesion of precipitates, 1874, 1054.  
 — anhydrous sodium acetate, 1874, 1082.  
 — action of heat on ordinary aldehyde, 1875, 347.  
 — on a new class of organic compounds, the carbonyls, and on the true function of ordinary camphor, 1875, 348.  
 — limited oxidation of hydrocarbons, 1875, 439.  
 — heat of combination of some fatty acids with alkalis, 1875, 530, 1005.  
 — on the acetylides of copper and silver, 1875, 745.  
 — preparation of crystallizable formic acid, 1875, 749.  
 — ammonium acetate, 1875, 749; 1876, i., 63.  
 — on chrysene and the compounds obtained by decomposing benzene at a high temperature, 1875, 760, 1190; 1876, i., 242.  
 — acetic anhydride, 1875, 1006.  
 — stability of salts of the fatty acids, and reciprocal displacement of these acids, 1875, 1155.  
 — partition of an acid between several bases in solution, 1875, 1236.  
 — synthesis of camphors by oxidation, 1875, 1259.  
 — detection of ethyl alcohol in wood-spirit, 1875, 1292.



**Berthelot, Marcellin** (*Pierre Eugène*),  
 direct union of propylene with the  
 hydracids, 1876, i., 58.  
 — thermic formation of barium di-  
 oxide and of oxygenated water, 1876,  
 i., 183.  
 — on the pyrobenzenic carbides and  
 on chrysene, 1876, i., 242.  
 — heat of solution of slightly soluble  
 bodies, 1876, i., 512.  
 — researches on the constitution of  
 acids and salts in solution, 1876, i.,  
 513.  
 — thermic researches on acetylene,  
 1876, i., 515.  
 — thermic researches on the forma-  
 tion of the alcohols and on etherifica-  
 tion, 1876, i., 674.  
 — thermic researches on the ethers of  
 the haloid acids, and on the amides,  
 1876, i., 675.  
 — rotatory power of styrolene, 1876,  
 i., 864.  
 — thermochemistry of aldehyde, 1876,  
 i., 869.  
 — heat evolved in the union of hydro-  
 carbons with hydracids and halogens,  
 1876, i., 870.  
 — calorimetric experiments on the  
 action of sulphuric acid upon hydro-  
 carbons, 1876, i., 872.  
 — action of monohydrated sulphuric  
 acid on alcohols, 1876, ii., 59.  
 — the explosion of gunpowder, 1876,  
 ii., 172.  
 — composition of coal gas, 1876, ii.,  
 183.  
 — absorption of free nitrogen by  
 organic substances, 1876, ii., 392.  
 — remarks on the actual existence of  
 matter formed of isolated atoms com-  
 parable with material points, 1876,  
 ii., 471.  
 — thermic researches on hyposul-  
 phurous acid,  $\text{SH}_2\text{O}_2$ , 1876, ii., 473.  
 — on the amount of heat evolved in  
 the formation of the two isomeric  
 propylic aldehydes, 1876, ii., 474.  
 — heat of formation of ozone, 1876,  
 ii., 595.  
 — formation and decomposition of  
 binary compounds by the dark dis-  
 charge, 1876, ii., 596.  
 — absorption of nitrogen and hydro-  
 gen by organic substances, 1876, ii.,  
 616.  
 — absorption of hydrogen under the  
 influence of the dark discharge, 1876,  
 ii., 616.  
 — thermic formation of hydroxylamine  
 or oxyammonia, 1877, i., 46.

**Berthelot, Marcellin** (*Pierre Eugène*),  
 absorption of free nitrogen by the  
 proximate principles of vegetables  
 under the influence of atmospheric  
 electricity, 1877, i., 222.  
 — potassium thiosulphate, 1877, i.,  
 278.  
 — does ozone combine with free nitro-  
 gen in presence of alkalis to form  
 nitrites and nitrates? 1877, i., 438.  
 — remarks on Villiers' researches on  
 melezitose, 1877, i., 451.  
 — the temperatures of combustion,  
 1877, i., 680; 1878, A., 51.  
 — analysis of illuminating gas, 1877,  
 i., 743.  
 — thermic phenomena of iodic acid,  
 1877, ii., 274.  
 — presence of benzene in coal gas,  
 1877, ii., 447.  
 — some fundamental data in thermo-  
 chemistry, 1877, ii., 823; 1879, A., 874.  
 — heat disengaged by combination in  
 the gaseous state: anhydrous acids  
 and water, 1877, ii., 825.  
 — thermal conditions of the forma-  
 tion of chloric acid and the chlorates,  
 1877, ii., 826.  
 — thermochemistry of chloral and its  
 hydrate, 1877, ii., 827.  
 — the decomposition of ammonium  
 nitrate by heat, 1877, ii., 840.  
 — oxidation of haloid salts and of  
 sulphurous and arsenious acids, 1877,  
 ii., 841.  
 — equivalents of organic compounds,  
 1877, ii., 862.  
 — fixation of nitrogen on organic sub-  
 stances under the influence of feeble  
 electric tension, 1877, ii., 862.  
 — preparation of acetylene, 1877, ii.,  
 868.  
 — composition of an ancient wine,  
 1877, ii., 953.  
 — observations on the mechanism of  
 chemical reactions, 1878, A., 8.  
 — influence of pressure on chemical  
 phenomena, 1878, A., 8.  
 — reduction of the aromatic hydro-  
 carbons, 1878, A., 48.  
 — use of bromine in gas analysis,  
 1878, A., 91.  
 — apparatus for measuring the heat  
 of vaporization of liquids, 1878, A.,  
 106.  
 — determination of the heat of fusion,  
 1878, A., 106.  
 — observations on the principle of  
 maximum work, and on the spon-  
 taneous decomposition of hydrated  
 barium dioxide, 1878, A., 107.

**Berthelot, Marc-Élie (Pierre Eugène)**,  
 on the limits of etherification, 1878, A., 127.  
 — on some melting points, 1878, A., 263.  
 — on a liquid contained in an ancient glass vase, 1878, A., 268.  
 — action of alcoholic potash on chloroform, 1878, A., 283.  
 — on the rotary power of *m*-styrolene, 1878, A., 296.  
 — hydrates of the hydric acids, 1878, A., 363.  
 — stability of ozone, 1878, A., 371.  
 — formation of hydrogen peroxide, ozone and persulphuric acid, 1878, A., 372.  
 — persulphuric acid, a new oxide of sulphur, 1878, A., 459; 1880, A., 607.  
 — thermochemistry of aluminium compounds, 1878, A., 548.  
 — the chemical reactions of the electric spark in the formation of persulphuric acid, 1878, A., 554.  
 — specific heat and heat of fusion of gallium, 1878, A., 556.  
 — relative affinities and reciprocal displacements of oxygen and the halogens in metallic compounds, 1878, A., 634.  
 — action of oxygen on the haloid compounds of tin, silicon and boron, 1878, A., 636.  
 — action of oxygen on the acid chlorides and analogous compounds of phosphorus and arsenic, 1878, A., 696.  
 — function of auxiliary acids in etherification, 1878, A., 765.  
 — reply to Pasteur's paper on the theory of fermentation, 1878, A., 995.  
 — oxidation of nitrous acid by ozone and by moist oxygen, 1879, A., 9.  
 — reciprocal displacements between oxygen, sulphur, and the halogens when combined with hydrogen, 1879, A., 296.  
 — reaction between mercury and hydrochloric acid gas, 1879, A., 298.  
 — relative affinities and reciprocal displacements of oxygen and the halogen elements, 1879, A., 351.  
 — hydrogenation of benzene and aromatic compounds, 1879, A., 376.  
 — explosive mixtures of air with combustible powders, 1879, A., 412.  
 — formation of haloid ethers in the gaseous state, 1879, A., 435.  
 — ozone and the silent electric discharge, 1879, A., 435.  
 — influence of metallic chlorides on etherification, 1879, A., 448.

**Berthelot, Marc-Élie (Pierre Eugène)**,  
 decomposition of haloid acids by metals, 1879, A., 589.  
 — combination of carbonic oxide with the elements, 1879, A., 591.  
 — changes which wine undergoes when kept, 1879, A., 763.  
 — heat of formation of cyanogen, 1879, A., 767.  
 — action of organic solvents on sulphur and on metallic sulphides, 1879, A., 771.  
 — transformation of sugar into alcohol by a purely chemical method, 1879, A., 778.  
 — amalgams of the alkali metals, and the nascent state, 1879, A., 864.  
 — etherification, 1879, A., 866.  
 — observations on Noble and Abel's memoir on the combustion of gunpowder, 1879, A., 875.  
 — chemical constitution of amalgams of the alkali metals, 1879, A., 883; 1880, A., 1.  
 — direct combination of cyanogen with hydrogen and the metals, 1879, A., 909.  
 — remarks on a note on chloral hydrate by Wurtz, 1879, A., 1006.  
 — decomposition of hydrogen selenide by mercury, 1880, A., 150.  
 — oxidation of gold by galvanic action, 1880, A., 158.  
 — heat of formation of ammonia, 1880, A., 207.  
 — relation between the heat developed on solution and that developed on dilution with complex solvents; thermochemistry of cuprous chloride, 1880, A., 208; 1881, A., 6.  
 — remarks on the saccharoses, 1880, A., 233; 1881, A., 567.  
 — remarks on Cochin's note relating to alcoholic fermentation, 1880, A., 276.  
 — heat of formation of gaseous chloral hydrate, 1880, A., 293, 434.  
 — copper hydride, 1880, A., 299.  
 — copper hydride: a reply to Wurtz, 1880, A., 299.  
 — chemical stability of matter in sonorous vibrations, 1880, A., 437.  
 — action of hydrogen peroxide on silver oxide and metallic silver, 1880, A., 441.  
 — silver sesquioxide, 1880, A., 442.  
 — decomposition of potassium permanganate by hydrogen peroxide, 1880, A., 444.  
 — heat of formation of the oxides of nitrogen, 1880, A., 522; 1881, A., 6.

**Berthelot, Marcellin (Pierre Eugène)**, compounds of hydrogen peroxide, 1880, A., 602.  
 — freezing mixtures formed by an acid and a hydrated salt, 1880, A., 687.  
 — some relations between the chemical mass of the elements and the heat of formation of their compounds, 1880, A., 688.  
 — heat of vaporisation of sulphuric anhydride, 1880, A., 693; 1881, A., 876.  
 — heat of combustion of the principal gaseous hydrocarbons, 1880, A., 786.  
 — thermochemistry of ethylamine and of trimethylamine, 1880, A., 787.  
 — heat of formation of hydrocyanic acid and cyanides, 1880, A., 839.  
 — vapour density of iodine, etc., 1880, A., 846.  
 — reciprocal displacements of the halogen elements, 1881, A., 5, 343.  
 — heat of formation of the oxides of nitrogen and of sulphur, 1881, A., 6, 673.  
 — basic salts; atacamite, 1881, A., 7.  
 — thermochemistry, 1881, A., 8.  
 — contributions to the history of the ethers, 1881, A., 8.  
 — stability of hydrogen peroxide, 1881, A., 16.  
 — preparation of chlorine, 1881, A., 22.  
 — thermochemistry of certain haloid salts, 1881, A., 219.  
 — magnetic oxide of iron, 1881, A., 219.  
 — thermal formation of pyrogenic hydrocarbons, 1881, A., 343.  
 — part played by time in the formation of salts, 1881, A., 344.  
 — remarks on the properties of vapours of chlorinated organic compounds, 1881, A., 470.  
 — heat of formation of sulphur oxides, 1881, A., 673.  
 — chloral alcoholate, 1881, A., 675.  
 — ethyl peroxide, 1881, A., 709.  
 — solution of chlorine in water, 1881, A., 784.  
 — spontaneous oxidation of mercury and other metals, 1881, A., 791.  
 — action of the hydracids on salts containing the same haloid elements, 1881, A., 868.  
 — reciprocal displacement of the haloid acids, 1881, A., 869.  
 — hydrochlorides of metallic chlorides, and the reduction of chlorides by hydrogen, 1881, A., 877.

**Berthelot, Marcellin (Pierre Eugène)**, ethylene chlorhydrin, 1881, A., 887.  
 — glycollic ether and ethylene oxides, 1881, A., 967.  
 — specific heat and heat of dilution of perchloric acid, 1881, A., 1092.  
 — limits of electrolysis, 1882, A., 260.  
 — nitric oxide as a supporter of combustion, 1882, A., 264.  
 — researches on electrolysis, 1882, A., 353.  
 — isomeric state of haloid salts, 1882, A., 355.  
 — heat of formation of calcium oxychloride, 1882, A., 452.  
 — explosion of acetylene, cyanogen, and endothermic compounds in general, 1882, A., 453.  
 — surfaces of separation, 1882, A., 454.  
 — decomposition of metallic formates in presence of water, 1882, A., 496.  
 — decomposition of the haloid salts of mercury by haloid acids and the haloid salts of potassium, 1882, A., 682, 1020.  
 — double salts of mercury, 1882, A., 684.  
 — the explosive wave, 1882, A., 685.  
 — conversion of carbon oxysulphide into carbamide and thiocarbamide, 1882, A., 823.  
 — haloid salts of silver and potassium, 1882, A., 1019.  
 — absorption of gases by platinum, 1882, A., 1022.  
 — electromotive force of a zinc-carbon couple, 1882, A., 1156.  
 — electrolysis of hydrogen peroxide, 1882, A., 1157.  
**Berthelot, Marcellin, and Emile (J. Jungfleisch)**, on isomeric symmetry and on the four tartaric acids, 1874, 763.  
**Berthelot, Marcellin, and Vladimir F. Luginin**, thermal researches on phosphoric acid and phosphates, 1876, i., 514.  
 — — thermal researches on citric acid, 1877, i., 681.  
**Berthelot, Marcellin, and Jules Ogier**, heat of formation of diallyl chlorinated compounds and aldehyde, 1881, A., 674.  
 — — researches on isomerism: benzene and dipropargyl, 1881, A., 719.  
 — — heat of formation of various carbon compounds, 1881, A., 870.  
 — — specific heat of nitrogen tetroxide, 1882, A., 1019.

- Berthelot, Marcellin**, and *Louis Giguad de Saint-Martin*, the state of salts in solution, 1873, 35.
- Berthelot, Marcellin**, and *Paul Vieille*, study of the explosive properties of mercury fulminate, 1881, A., 779.
- diazobenzene nitrate, 1881, A., 809.
- heat of formation of potassium perchlorate, 1881, A., 1093.
- nitrogen sulphide, 1882, A., 460.
- velocity of the propagation of explosion in gases, 1882, A., 685, 1260.
- detonation and the production of an explosive wave, 1882, A., 1261.
- Berthelot, Marcellin**, *Coulier*, and *Joseph Charles d'Almeida*, verification of Baumé's hydrometer, 1874, 122.
- Berthold, G.** See *Johann Reinke*.
- Bertin, A.**, optical structure of ice, 1878, A., 632.
- Bertoni, Giacomo**, preparation of ethyl nitrate, 1877, i., 449.
- preparation of hydroxylamine, 1880, A., 297.
- conversion of hydroxylamine into nitrous and nitric acids, 1880, A., 298.
- nitroso- and nitro-*m*-cresol, 1882, A., 1198.
- Bertoni, Giacomo**, and *Carlo Raimondi*, detection of nitrous acid in the blood, 1882, A., 1231.
- Bertoni, Giacomo**. See also *Carlo Raimondi*.
- Bertram, Julius**, analyses of dried fruits, 1877, ii., 797.
- excretion of phosphoric acid by *Herbivora*, 1879, A., 392.
- Bertrand, Armand**, electro-deposition of bismuth, 1876, i., 451.
- preparation of hydrobromic acid, 1876, i., 877.
- electro-deposition of aluminium, magnesium, cadmium, bismuth, antimony, and palladium, 1877, i., 161.
- solubility of lead carbonate in ammonium butyrate, 1877, i., 283.
- action of titanium tetrachloride, stannic chloride, and antimony pentachloride on acetic acid and acetic anhydride, 1880, A., 460.
- compounds of titanium tetrachloride with acetic chloride, 1880, A., 624.
- determination of active oxygen in barium or hydrogen peroxide, 1880, A., 744.
- Bertrand, Armand**, combination of titanium tetrachloride with ethyl ether, 1881, A., 210.
- reduction of ethyl nitrate by alcohol, 1881, A., 242.
- combination of titanium tetrachloride and benzoic chloride, 1881, A., 273.
- combination of titanium tetrachloride with phosphorus trichloride, 1881, A., 317.
- Bertrand, Armand**, and *Et. Finot*, action of antimony pentachloride on carbon bisulphide, 1881, A., 239.
- Bertrand, Armand**. See also *Et. Finot, Aug. Richard*.
- Bertrand, Emile**, new locality of leadhillite, 1873, 481.
- a new mineral from the Pyrenees, 1876, ii., 387.
- the crystalline form of melinophane, 1877, i., 178.
- leadhillite from Matlock, 1878, A., 382.
- cinnabar crystals from California, 1879, A., 440.
- the crystal form and twin formation of leucophane, 1879, A., 412.
- andalusite from Brazil, 1881, A., 25.
- thannasite and melanophlogite, 1881, A., 1000.
- Berwerth, Fritz**, investigation of two magnesia micas, 1878, A., 478.
- examination of lithia mica from Paris (Maine), Rozena, and Zinnwald, 1879, A., 23.
- nephrite and bowenite from New Zealand, 1881, A., 377.
- Besthorn, Emil**. See *Emil Fischer*.
- Bethge, H.** See *Carl Engler*.
- Bethke, G.**, and *F. Lürmann*, Welter's law and the latent heat of carbon vapour, 1876, ii., 267.
- Bettel, William**, modification of Forbes's method of estimating titanic acid, 1874, 93.
- determination of basic cinder and oxides in manufactured iron, 1881, A., 648.
- Bettelli Ciro**, detection of amyl alcohol in presence of ethyl alcohol, 1875, 785.
- oleandrine and the so-called  $\psi$ -curarine, 1876, i., 404.
- Bettendorf, Anton**, ardenite, 1877, ii., 175.
- separation of vanadic acid from the oxides of aluminium and iron, 1877, ii., 175, 922.



- Bevan, Edward John**, note on a crystallised compound of salt and water, 1877, i., 440.
- Bevan, Edward John**, and **Charles Frederick Cross**, bast fibres, 1881, A., 1121.
- conversion of sodium sulphate into hydroxide, 1882, A., 12.
- cellulose and coal, 1882, A., 31.
- Bevan, Edward John**. See also **Charles Frederick Cross**.
- Beyer, Bruno**, some derivatives of isophthalic acid, 1881, A., 96; 1882, A., 1294.
- Beyrich, C.**, process for bleaching vegetable fabrics, 1879, A., 761.
- Bianconi, Gian Giuseppe**, new experiments on the flexibility of ice, 1876, ii., 271.
- Bibanoff, N. A.**, results of fusing together certain compounds of aniline and toluidine, 1874, 1190.
- Bibra, Ernst (Freiherr) von**, blackened silver chloride and subchloride, 1875, 1162.
- blackening of silver chloride by light, 1876, i., 43.
- cleaning of old oil paintings, 1878, A., 260.
- restoration of writing in old manuscripts, 1878, A., 260.
- seasoning of new wine casks, 1878, A., 454.
- Bichat, Ernest**, rotatory power of hyposulphates, 1874, 227.
- magnetic rotatory power of vapours, 1879, A., 577.
- Bickerdike, William Edward**, note on pure phenol, 1875, 1259.
- Bicket, John Hughes**. See **Edmund James Mills**.
- Bidaud**, the flame test for boric acid, 1873, 1055.
- Bidaux, R.** See **Paul Guyot**.
- Bieber, Joh. Diedr.**, tests for oil of almonds, 1878, A., 343.
- Biedermann, Rudolf**, cresol derivatives, 1873, 898.
- nitronaphthol, 1874, 160.
- ethenyldiphenyldiamine, 1874, 808.
- oxymercaptans, 1876, i., 695.
- gantherylene, 1876, i., 704.
- disacetylphenylenediamine, 1877, i., 474.
- action of phthalic anhydride on aromatic diamines, 1877, ii., 783.
- Biedermann, Rudolf**, and **Siegmund Gabriel**, red coloration of yellow tiles, 1878, A., 251.
- Biedermann, Rudolf**, and **Albert R. Ledoux**, mesitol, 1875, 569, 761.
- Biedermann, Rudolf**, and **William Herbert Pike**, cresotic acid, 1873, 904.
- Biedermann, Rudolf**, and **Ludwig Remmers**, bromonitronaphthol, 1874, 802.
- Biedermann, Rudolf**. See also **August Martin**.
- Biefel, R.**, and **Theodor Poleck**, poisoning by choke damp and coal gas, 1881, A., 853.
- Biefel, R.** See also **Theodor Poleck**.
- Biel, J.**, testing of quinine, 1873, 410.
- testing of zinc permanganate, 1874, 1101.
- crystallised zinc permanganate, 1874, 1138.
- investigation of American and Russian petroleum, 1879, A., 1076.
- Prollius' method for the estimation of alkaloids in cinchona bark, 1882, A., 1139.
- Bielefeldt, Max**, derivatives of isodurene, 1880, A., 37.
- Bielschowski, Oscar**. See **Carl Wilhelm Will**.
- Biermann, E. W. L.**, manganese alloys, 1879, A., 186.
- ferro-silicon, 1882, A., 118.
- Bilek, Franz**, manuring experiments, 1880, A., 345.
- Bilek, Franz**. See also **Vincenz Theobald Magerstein**.
- Bill, J. H.**, double decomposition of potassium bromide and sodium chloride in the animal organism, 1877, i., 731.
- Billaudot, Léopold**, zorgite, a selenium mineral from the Argentine Republic, 1882, A., 1269.
- Billeter, Otto**, phenyl sulphocyanate, 1875, 464.
- action of allyl iodide on potassium sulphocyanate, 1876, ii., 184.
- Billings, G. H.**, properties of alloys of iron with other metals, 1878, A., 839.
- Biltz, E.**, sodio-ferrous sulphate, 1875, 44.
- on Melckebeke's test for potassium bromide in potassium iodide, 1876, i., 745.
- detection of the oxygen acids of iodine in nitric acid by sulphuretted hydrogen and starch solution, 1878, A., 243.
- Bimmermann, E. H.**, changes which starch undergoes in the animal organism, 1880, A., 677.
- Binder, Felix**, dimethyl-*p*-phenylene-diaminecarbamides, 1879, A., 627.

- Binder, Felix.** See also *Rudolph Fittig*.  
**Binder, Otto**, commercial oxalic acid contaminated with sulphuric acid, 1877, ii., 641.
- Bindschedler, Robert**, separation of toluidine and  $\psi$ -toluidine, 1873, 911.  
 — safranine, 1880, A., 391.  
 — manufacture of resorcinol and colouring matters derived from it, 1880, A., 426.
- Bindschedler, Robert**, and **Albert Busch**, eosin, 1876, ii., 84.  
 — manufacture of resorcin, eosin and other derivatives of resorcin, 1879, A., 291.  
 — new fast green, or malachite-green, 1879, A., 571.
- Bindschedler, Robert.** See also *Wilhelm Weith*.
- Bing, Isidor**, occurrence and estimation of nitrates in some vegetable substances, 1881, A., 122.  
 — ventilation of laboratories, 1882, A., 1332.
- Binz, Karl**, influence of ethyl alcohol on animal heat, 1873, 518.  
 — production of ozone in the animal organism, 1873, 928.  
 — value of tincture of guaiacum as a test for ozone, 1873, 935.  
 — the power of organic bases to hinder oxidation, 1875, 649.  
 — decomposition of sodium salicylate in the organism, 1876, ii., 319.
- Binz, Karl**, and *Paul Friedrich Hugo Schulz*, theory of the physiological action of arsenic, 1880, A., 174; 1882, A., 242.
- Bird, Alfred**, obituary notice of, 1879, T., 266.
- Birnbaum, Karl**, a new salt of an irid-ammonium, 1880, A., 13.  
 — peculiar changes of gas pipes, 1880, A., 198.  
 — analyses of gluten bread, 1881, A., 67.
- Birnbaum, Karl**, and **A. Bomasch**, on the behaviour of ammonium salts to bone-black, 1876, i., 803.
- Birnbaum, Karl**, and **Julius Gaier**, action of iodine on the silver salts of dibasic acids, 1880, A., 801.
- Birnbaum, Karl**, and **J. Koken**, examination of an acid liquid from the condenser of the vacuum apparatus in a beetroot sugar manufactory, 1875, 674.
- Birnbaum, Karl**, and **Gregor Lurie**, action of resorcinol on urea, 1881, A., 95.  
 — a phenylenecarboxylic ether, 1882, A., 200.
- Birnbaum, Karl**, and **M. Mahn**, behaviour of calcium oxide to carbonic anhydride, 1880, A., 5.
- Birnbaum, Karl**, and **Hermann Reinherz**, action of iodine on silver salts of some aromatic acids, 1882, A., 970.
- Birnbaum, Karl**, and **C. Wittich**, action of sulphurous anhydride on the oxides of the alkaline earths, 1880, A., 606.
- Birner, H.**, effect of moisture in soils on yield of potatoes, 1881, A., 1066.  
 — changes effected by frost in the composition of potatoes, 1882, A., 1227.
- Birner, H.**, and **Carl Brimmer**, researches on the changes occurring in stable manure when kept, 1881, A., 937.
- Birner, H.**, and **Troschke**, influence of the weight of the seeds on the yield of the crop, 1882, A., 1127.
- Birot, J.**, pathological albumins; the zymases; the estimation of albumin; the nature of ascitic fluid and the alterability of albumoids, 1875, 374.
- Bischof, A.** See *Carl Theodor Liebermann*.
- Bischof, Carl**, pyrometric examination of Dinas bricks and their raw material, 1873, 192.  
 — fire-resisting power of various clays, 1873, 951.  
 — behaviour of fire-clay in contact with iron slag at a high temperature, 1873, 1269.  
 — pyrometric examination of a yellow and a red brick-clay, 1874, 1009.  
 — newly discovered kaolin deposit near Güssersdorf, 1875, 433.  
 — plasticity and shrinking of clays, 1875, 1298.  
 — on a felspar recently found in the Odenwald with a determination of its fusibility and of the law relating thereto, 1876, i., 527.  
 — pyrometric examination of two artificial kaolins, compared with natural kaolin, 1876, i., 751.  
 — so-called plastic Dinas crystal, 1877, i., 354.  
 — analysis and determination of the fusibility of three Bavarian felspars, 1877, i., 446.  
 — cohesive power of clays, 1878, A., 536.  
 — magnesium and calcium compounds as refractory and dephosphorizing materials, 1880, A., 831.
- Bischof, Gustav**, on Frankland and Armstrong's methods of water analysis, 1874, 600.

- Bischof, Gustav**, corrosion of lead by water, 1877, i., 428.  
 — on putrescent organic matter in potable waters, 1877, ii., 812.  
 — estimation of traces of lead, 1879, A., 402.  
 — sanitary notes on potable water, 1879, A., 985.
- Bischof, O.** See **Otto Wallach**.
- Bischoff, Carl**, chloro-derivatives of acetone, 1873, 159; 1876, i., 557.  
 — derivatives of urethane, 1874, 890.  
 — compounds of urethane with aldehydes, 1875, 146.  
 — homologues of acetopropionic acid, 1881, A., 412.
- Bischoff, Carl.** See also **Adolf Pinner**, **Theodor Weyl**.
- Bischoff, Carl Adam**, synthesis of tri- and tetra-basic fatty acids, 1881, A., 155.  
 — synopsis of the polybasic fatty acids obtained from malonic acid by Conrad's method, 1882, A., 1187.
- Bischoff, Carl Adam**, and **August Emmert**, tri- and penta-basic acids of the paraffin series, 1882, A., 1191.  
 — ethyle benzylchloromalonate, 1882, A., 1208.
- Bischoff, Carl Adam**, and **Max Guthzeit**,  $\beta$ -methylethylenyltricarboxylic acid, 1881, A., 579.
- Bischoff, Carl Adam.** See also **Max Conrad**.
- Bischoff, F. E.**, Thuringian slates, 1874, 781.
- Bischoff, Richard.** See **Albert Hilger**.
- Bisschopinck, L.**, chlorinated acetonitriles, 1873, 1128.
- Bissell, Emery Gilbert**, some constituents of hops, 1878, A., 328.
- Bittmann, Carl**, estimation of sugar in beet juice, 1880, A., 144.
- Bizio, Giovanni**, detection of bromine in presence of urea, 1873, 190.  
 — the purple of the ancients and the colouring matter found in the sarcophagus of St. Ambrose at Milan, 1873, 657.  
 — gelatin considered as a reducing agent, 1877, i., 325.  
 — distribution of copper in the animal kingdom, 1880, A., 565.
- Bizzarri, Decio.** See **Giovanni Campani**.
- Bizzozero, Giulio**, and **Carlo Sanquirico**, variations in the composition of the serum after blood letting, 1882, A., 751.
- Blackley, J. Galley**, new and convenient form of ureometer for clinical use, 1876, ii., 466.
- Blaikie, J. Adrian**, crystalline compounds formed in water containing hydrogen sulphide and mercaptan, 1882, A., 592.
- Blaikie, J. Adrian.** See also **Alexander Crum Brown**.
- Blair, Andrew A.**, estimation of chromium and aluminium in steel and iron, 1877, ii., 802.
- Blair, Thomas S.**, manufacture of spongy iron, 1875, 1302.  
 — separation of phosphorus from iron, 1880, A., 74.
- Blake, James**, connection between isomorphism, molecular weight, and physiological action, 1875, 96.  
 — relation between the molecular properties of inorganic compounds and their action on living animal organisms, 1881, A., 629.  
 — atomic weight of glucinum, 1882, A., 701.  
 — relation between the isomorphism, atomic weights, and toxic effects of metallic salts, 1882, A., 879.
- Blake, William Phipps**, occurrence of cinnabar in California and Nevada, 1881, A., 689.  
 — occurrence of realgar and orpiment in Utah, 1882, A., 148.
- Blanche, T.** See **F. Jolyet**.
- Blanchet, C.**, *Thapsia garganica*, 1880, A., 718.
- Blankenhorn, Adolph**, aëration of must, 1879, A., 492.  
 — raising vines from seed, 1880, A., 418.
- Blankenhorn, Adolph**, and **H. W. Dahlen**, fermentation of must, 1879, A., 993.
- Blankenhorn, Adolph** (and others), preparation of wine, 1880, A., 200.
- Blankenhorn, Ernst**, action of thiocyanic acid on alcohols, 1877, ii., 423; 1878, A., 215.
- Blankenhorn, Ernst.** See also **Arthur Gamgee**.
- Blas, Charles**, detection of picrotoxin in beer, 1873, 94.  
 — detection of salicylic acid in beer, 1879, A., 343.
- Blascovics, E.**, employment of soja bean as food for milch cows, 1882, A., 82.
- Blattner, Gottlieb.** See **Wilhelm Michler**.
- Blatzbecker, A.**, benzylisoxylene and benzoyl isophthalic acid, 1877, i., 469.
- Bleekrode, L.**, electrical conduction and electrolysis of chemical compounds, 1878, A., 464.

- Eleibtreu, Hermann.** See *Otto Wal-lach*.
- Bleunard, A.**, action of trimethylamine on carbon bisulphide, 1879, A., 394.  
 — constitution of stag's horn 1880, A., 271.  
 — products of the decomposition of proteids, 1880, A. 482.  
 — legumin, 1881, A., 449.  
 — products of the decomposition of protein compounds, 1881, A., 1047.
- Bleunard, A.**, and *G. Vrau*, action of iodine on naphthalene at high temperatures, 1882, A., 733.
- Blochmann, Reinhard**, the non-luminous flame of the Bunsen burner, 1874, 17.  
 — gas analysis, 1874, 290.  
 — metallic derivatives of acetylene, 1874, 674.  
 — on the processes which take place in the imperfect combustion of illuminating gas and on the behaviour of coal-gas when heated without access of air, 1875, 137.  
 — action of air in rendering the flame of the Bunsen lamp non-luminous, 1882, A., 129.  
 — luminosity of the flame of a Bunsen burner induced by heating the tube, 1882, A., 256.
- Blomstrand, Christian Wilhelm**, toluene-disulphonic acid, 1873, 505.  
 — the constitution of diazo-compounds, 1875, 571.  
 — titanites from Småland, 1880, A., 15.  
 — arcetolite, a mineral from Spitzbergen, 1881, A., 1006.
- Blondel, E.**, xylydene-ponceau, 1882, A., 1250.
- Blondlot, N.**, black phosphorus, 1874, 869.
- Blondlot, René**, diamagnetism of condensed hydrogen, 1877, ii., 820.  
 — capacity of voltaic polarisation, 1879, A., 864.  
 — electric conductivity of heated gases, 1881, A., 671.
- Bloxam, Thomas**, obituary notice of, 1873, 773.
- Bloxam, William Popplewell.** See *John Millar Thomson*.
- Blumberg, Theodor Jakob**, contributions to a knowledge of the alkaloids of ergot, 1879, A., 269, 387.
- Blumenthal, Moritz.** See *Carl Lorenz*.
- Blunt, Thomas Porter**, notes on the analysis of minium, 1875, 1290.  
 — effect of light on chemical compounds, 1880, A., 521.
- Blunt, Thomas Porter, Williams's** nitrogen process, 1882, A., 100.
- Blyth, Alexander Wylter**, chemical examination of the peppers of commerce, 1875, 292.  
 — analysis of genuine black tea, 1875, 385.  
 — disappearance of organic matter from water running through iron pipes, 1875, 386.  
 — black pepper, 1876, i., 430.  
 — the poison of the cobra de Cappelo, 1877, ii., 517; 1880, A., 490.  
 — microchemistry as applied to the identification of tea leaves, and a new method for the estimation of theine, 1877, ii., 517.  
 — manipulation of fatty acids, 1877, ii., 931.  
 — separation of salicylic acid, 1877, ii., 931.  
 — the temperatures at which some of the alkaloids, etc., sublime, as determined by an improved method, 1878, T., 313.  
 — transformation of albuminoids in cheese and milk into fats, 1878, A., 680.  
 — the composition of cows' milk in health and disease, 1879, T., 530.  
 — composition of Devonshire cream, 1879, A., 1068.  
 — a new and simple apparatus for the treatment of substances in open dishes by volatile solvents, 1880, T., 140.  
 — determination of specific gravity, 1880, A., 572.  
 — estimation of quinine, 1881, A., 1176.
- Boasson, J. Boas.** See *Emilio Nölting, Léo Vignon*.
- Bobierre, Adolphe**, action of water on lead and other metals, 1874, 233.  
 — on the boiling of sulphuric acid, 1875, 1237.
- Bochmann, Chili** saltpetre as a manure for barley, 1879, A., 1051.
- Bochmann and Döring**, effect of artificial manures on the growth of barley and on meadow land, 1879, A., 828.
- Bock, J. C. A.**, decomposition of neutral fatty bodies, 1875, 1178.
- Bock, R.** See *Adolph Claus*.
- Bodaszewsky, L. J.**, smoke and vapour under the microscope, 1881, A., 505.
- Bode, Friedrich**, sulphuric acid manufacture, 1873, 413.  
 — the roasting of pyrites, 1873, 956.  
 — estimation of oxygen in vitriol chamber gases, 1873, 1159.



- Bode, Friedrich**, formation of sulphuric anhydride by the combustion of pyrites, 1876, ii., 119.  
 — extraction of copper by wet processes, 1879, A., 757.  
 — consumption of fuel in house stoves, 1882, A., 1331.
- Bodenbender, H.**, manuring of beetroot, 1880, A., 137.
- Bodenbender, H.**, and **Ihlée**, composition of ash of two kinds of beet seed, 1880, A., 496.
- Bodenbender, H.** (and others), analyses of beet molasses, 1881, A., 1089.  
 — — improvements in the manufacture of sugar from molasses by means of lime, 1882, A., 1015.
- Bodewig, Charles**, the optical and thermic properties of latholite, 1877, ii., 170.  
 — the glaucophane of Zermatt, 1877, ii., 171.  
 — Fittica's nitrobenzoic acids, 1880, A., 251.
- Boeck, G.**, a new use for potatoes, 1882, A., 1340.
- Boeck, Hermann von**, action of arsenic on the chemical change (metabolism) of albumin, 1877, ii., 912.
- Boeck, Kurt.** See *Carl Theodor Liebermann*.
- Böcker, Franz.** See *Wilhelm Kalmann, Johann Oser*.
- Böcking, Eduard**, two new syntheses of methylethylhydroxyacetic acid, 1880, A., 872.
- Böckmann, Fr.**, celluloid, 1881, A., 481.  
 — estimation of sulphur in pyrites, 1882, A., 993.
- Bödeker, Karl**, lycopodine, 1881, A., 1158.
- Böhm, Joseph**, the respiration of land plants, 1873, 1049.  
 — effect of coal gas on plants, 1874, 597.  
 — formation of oxygen by green land plants immersed in water containing carbonic acid, 1874, 703.  
 — influence of carbon dioxide on the verdure and growth of plants, 1874, 704.  
 — germination of seeds in pure oxygen, 1874, 704.  
 — function of lime in the germination of the scarlet runner, 1875, 1284.  
 — respiration and fermentation of water plants, 1875, 1255.  
 — formation of starch in the cotyledons of cress, radishes, and flax, 1876, i., 952.  
 — formation of starch in chlorophyll granules, 1876, i., 953.
- Böhm, Joseph**, evolution of hydrogen from plants under boiled water, 1876, ii., 321.  
 — the plant nourishing value of calcium salts, 1877, i., 735.  
 — absorption of water and of lime salts by leaves, 1877, ii., 209, 350.  
 — absorption of carbonic acid by vegetable cell walls, 1877, ii., 348.  
 — rise of sap in plants, etc., 1877, ii., 348.  
 — formation of starch in the cells of plants excluded from light, 1878, A., 84; 1879, A., 551.  
 — elimination of oxygen from green twigs under boiled water in sunlight, 1878, A., 162.  
 — blanching of green leaves in bright sunshine, 1878, A., 238.  
 — composition of gases contained in the cells of wood, 1878, A., 802.  
 — functions of vegetable ducts, 1880, A., 911.  
 — pressure in plant stems, 1881, A., 60.  
 — formation of hydrogen sulphide from sulphur and water, 1882, A., 801.
- Böhm, Rudolf**, and **Friedrich Albin Hoffmann**, post-mortem formation of sugar in the liver, 1882, A., 541.
- Böhmer, Carl**, diazophenols, 1882, A., 396.  
 — absorbents for nitric oxide, 1882, A., 1230.
- Böhnke-Reich, Heinrich**, on picrotoxin, 1873, 643.
- Boehringer, Ad.** See *Otto Wallach*.
- Böhringer, Christian.** See *Carl Forst*.
- Boeke, J. D.**, detection of ozone, 1873, 938.  
 — action of ozone on pyrogallie acid, 1873, 1031.  
 — removal of nitrogen from alkaloids, 1873, 1041.  
 — detection and estimation of arsenic, 1880, A., 752.
- Börnstein, Ernst**, preparation of glycol, 1876, ii., 396.
- Bösler, Magnus**, cuminoïn and anisoïn, 1881, A., 421.  
 — o-tolylhydrazine, 1882, A., 1062.
- Bötsch, Konrad**, derivatives of saligenol, 1882, A., 174.  
 — decomposition of certain resins by distillation over zinc dust, 1882, A., 209.  
 — incomplete combustion of gases, 1882, A., 455.

**Böttger, Rudolph Christian**, colouring paraffin and other materials black for candle making, 1873, 20.

- preparation of a black printing colour resisting the most powerful chemical agents, for linen and cotton fabrics, 1873, 205.
- behaviour of certain metals to potassium ferrocyanide, 1873, 282, 473.
- new depilatory, 1873, 308.
- preparation of pure anhydrous cuprous oxide of a fine vermilion colour, 1873, 355.
- a blue stamp colour, 1873, 423.
- a simple process for the detection of water and alcohol in ether, 1873, 532.
- estimation of alcohol in volatile oils, 1873, 532.
- indications of a nitrite in saliva, 1873, 536.
- detection of sulphocyanogen in saliva, 1873, 536.
- detection of traces of manganese, 1873, 652.
- a collodion of extraordinary tenacity, 1873, 658.
- preparation of red quick-matches of gun-cotton, 1873, 956.
- action of stannous oxide dissolved in soda on gun-cotton, 1874, 192, 1078.
- active oxygen and hydrogen, 1874, 222.
- action of ammonia on peroxide of silver, 1874, 229.
- relation of strontium and lithium flames to phosphorescent bodies, 1874, 613.
- formation of ozone by combustion of hydrogen in oxygen, 1874, 653.
- action of induced electricity upon air, 1874, 653.
- safe preparation of chloride of nitrogen, 1874, 654.
- direct detection of certain substances in fresh plants, barks, etc., by chemical reagents, 1874, 715.
- saffranin, 1874, 722.
- new method of lighting gas, 1874, 727.
- practical application of ammonium vanadate, 1874, 727.
- palladium-hydrogenium, 1874, 866.
- preparation of pure cuprous chloride, 1874, 872; 1878, A., 113.
- detection of cotton threads in linen cloth, 1874, 1019; 1878, A., 918.
- behaviour of permanganic acid with various substances, 1874, 1055.

**Böttger, Rudolph Christian**, behaviour of phosphorus with various metallic solutions, 1874, 1060; 1878, A., 645.

- thallium trioxide, 1874, 1063.
- action of sodium formate on platinum and palladium salts, 1874, 1065.
- detection of iron in nickel salts, 1874, 1101.
- preparation of silver peroxide, 1874, 1135.
- behaviour of bismuth during its passage from the liquid to the solid state, 1874, 1136.
- preparation and properties of hydrogenated palladium, 1874, 1139.
- means of promoting the germinating power of seeds, 1875, 101.
- behaviour of infusorial earth to aniline dyes, 1875, 170.
- occluded hydrogen in so-called explosive antimony, 1876, ii., 48.
- experiments with Crookes' radiometer, 1876, ii., 266.
- electro-deposition of cobalt, 1877, ii., 375.
- change of colour in certain double iodides, 1878, A., 112.
- preparation of platinum-black, 1878, A., 114.
- behaviour of wool to an ammoniacal solution of fuchsine, 1878, A., 184.
- behaviour of iodine to amido-mercuric chloride, and on a safe method of preparing iodide of nitrogen, 1878, A., 199.
- Planté's secondary battery, 1879, A., 101.
- production of rotatory movements in mercury, 1879, A., 102.
- production of a high temperature by means of ammonium nitrate, 1879, A., 102.
- formation of hydrogen peroxide by the explosion of a mixture of oxygen and hydrogen, 1879, A., 103.
- preparation of salts in a finely divided state, 1879, A., 107.
- pyrophoric iron, 1879, A., 119.
- crystalline structure of bees' wax, 1879, A., 171.
- reagent for detecting nickel, 1879, A., 179.
- detection of gypsum, heavy spar, etc., in meal, 1879, A., 183.
- steeling copper-plates, 1879, A., 186.

**Böttger, Rudolph Christian**, and **Theodor Petersen**, nitrogen compounds of anthraquinone, 1873, 389.

- Böttiger, Carl**, pyroracemic acid (*pyruvic acid*), 1873, 1128; 1875, 1176; 1876, i., 66; 1878, A., 31; 1879, A., 524.
- action of phosphoric chloride on pyroracemic acid, 1873, 1221.
- decomposition of pyroracemic acid, 1874, 1158.
- contributions to our knowledge of the connection between the bi- and tri-derivatives of benzene, 1875, 567.
- on the decomposition of barium pyracemate by boiling with water, and on uvitonic acid, 1876, i., 566; 1877, i., 82; 1878, A., 729.
- sulphur compounds of pyroracemic acid, 1876, ii., 70.
- on sulpho-*p*-bromo- and sulpho-*m*-bromo-benzoic acids, 1876, ii., 202.
- dry distillation of tartaric acid, 1876, ii., 286.
- the condensations of pyroracemic acid, 1876, ii., 400.
- miscellaneous notes, 1876, ii., 413.
- derivatives of uvitic acid, 1876, ii., 414; 1877, ii., 896.
- thiolactic acid, 1876, ii., 624; 1879, A., 45.
- sulpho-*p*-bromobenzoic acid, 1877, i., 82; 1878, A., 729.
- action of hydrocyanic acid on pyroracemic acid, 1877, i., 455.
- action of zinc dust on the chlorides of sulpho-*p*-bromobenzoic acid, 1877, i., 468.
- the acids  $C_5H_6O_4$ , 1877, i., 590.
- the action of ammonia and amido-derivatives on pyroracemic acid, 1877, ii., 320.
- dry distillation of glyceric acid, 1877, ii., 443.
- glyoxylic acid, 1877, ii., 587, 879; 1879, A., 619; 1880, A., 621.
- action of aniline on pyroracemic acid, 1877, ii., 596.
- an absorbent of carbon monoxide, 1877, ii., 725.
- acetylenecarbamide, 1878, A., 295; 1879, A., 142.
- a base  $C_{19}H_{15}N_2$ , 1878, A., 506, 723; 1879, A., 716.
- aniluvitonic acid, 1878, A., 673.
- action of sulphuryl chloride on benzene, 1878, A., 863.
- action of sulphuryl chloride on aniline, 1878, A., 863.
- action of phosphorus pentasulphide on organic acids, 1879, A., 45.
- action of aniline on glyoxylic acid, 1879, A., 51.
- Böttiger, Carl**, thioglycollic and thiodiglycollic ethers, 1879, A., 138.
- dissociation of ammonium chloride: a lecture experiment, 1879, A., 196.
- conversion of aldehyde into mercaptan, 1879, A., 451.
- the amount of water contained in crystallized calcium glycolate, 1879, A., 522.
- benzal sulphide and thiobenzaldehyde, 1879, A., 791.
- decomposition of mesoxalic acid, 1880, A., 237.
- new method of preparing thiodilactic acid, 1880, A., 238; 1881, A., 415.
- phlobaphene, 1880, A., 650.
- diamidotriphenylmethane, 1880, A., 813.
- behaviour of glyoxylic acid with potash, 1881, A., 155.
- formation of uvic (pyrotritartaric) acid, 1881, A., 155.
- preparation of  $\alpha$ -hydroxyuvitic acid, 1881, A., 172.
- constitution of uvitonic acid, 1881, A., 173.
- synthetic pyridinetricarboxylic acid, 1881, A., 181.
- synthesis of quinoline, 1881, A., 182.
- oxethylidenesuccinic acid, 1881, A., 254.
- constitution of aniluvitonic acid, 1881, A., 278.
- dimethyl  $\alpha$ -hydroxyuvitate, 1881, A., 278.
- ethyl pyracemate, 1881, A., 418.
- synthetic picolinemonocarboxylic and pyridinedicarboxylic acids, 1881, A., 612.
- formation of pyrroline, 1881, A., 614.
- tartronic acid, 1881, A., 714.
- introduction of aromatic hydrocarbons into ketonic and aldehydic acids, 1881, A., 814, 1035.
- sugar from the tannin of the oak-bark, 1881, A., 1021; 1882, A., 157.
- pyroracemic acid compounds, 1881, A., 1032.
- action of sodium thiosulphate on ketonic acids, 1882, A., 1051.
- Böttiger, Carl**, and **William Ramsay**, *m*-toluic acid, 1874, 69.
- Böttiger, Carl**. See also *Theodor Cöllen*.
- Bogdanoff, A.**, action of antimonious chloride upon azobenzene, 1877, ii., 325.

- Bogomoletz, Iran**, preparation of trimethylene bromide, 1878, A., 963.  
 — action of zinc methyl on chloroacetic chloride, 1881, A., 401.
- Boguski, Józef Jerzy von**, and **Nicholas N. Kajander**, on the velocity of chemical action, 1877, ii., 831.
- Boguski, Józef Jerzy von**. See also **Walerius von Hemilian**.
- Bohannon, Rosser Daniel**, zinc for analytical use, 1877, i., 315.
- Bohlig, E.**, volumetric estimation of sulphuric acid and chlorine, 1874, 815.  
 — direct preparation of soda and potash from their chlorides, 1877, ii., 915.  
 — magnesia preparation for purifying potable waters, 1878, A., 350.  
 — purification and analysis of water, 1878, A., 920.  
 — water analysis, 1879, A., 963.
- Boillat, Fr.**, contributions to the study of antiseptics, 1882, A., 1243.
- Boille**, on the hydrobromides of quinine and the preparation of the neutral hydrobromide, 1875, 276.
- Boillot, A.**, production and mode of action of the silent electric discharge, 1873, 713.  
 — new method of producing ozone, 1873, 724.  
 — action of ozone on alcohol and combination of cyanogen with hydrogen under the influence of the silent electric discharge, 1873, 865.  
 — decolorising power of ozone, 1875, 732.  
 — action of ozone on animal substances, 1876, i., 724.
- Boiraux, G.**, and **E. Léger**, use of coal-oils in the preparation of alkaloids, 1875, 1264.
- Boisbaudran, Paul Emile (dit François)**, **Lecoq de**, the spectrum of erbium, 1873, 829.  
 — remarks on some peculiarities observed during researches in spectral analysis, 1873, 1257.  
 — on some metallic spectra, 1874, 217.  
 — on supersaturation, 1874, 1133.  
 — molecular equilibrium of solutions of chrome alum, 1875, 427, 730.  
 — unequal solubility of different faces of the same crystal, 1875, 729.  
 — inequality of action of isomorphous bodies on the same solution, 1875, 729.  
 — easy production of very low temperatures by means of Carré's freezing apparatus, 1875, 1235.
- Boisbaudran, Paul Emile (dit François)**, **Lecoq de**, theory of solution and crystallisation, 1875, 1235.  
 — new arrangement for glass gas-burners, 1875, 1236.  
 — chemical and spectroscopic characters of a new metal, gallium, 1876, i., 190.  
 — some properties of gallium, 1876, i., 521, ii., 484.  
 — the spectrum of gallium, 1876, i., 882.  
 — extraction of gallium from its ores, 1876, ii., 275; 1877, i., 48.  
 — theory of spectra; observations on the last communication of J. N. Lockyer, 1876, ii., 470.  
 — new researches on gallium, 1876, ii., 484.  
 — action of zinc on solutions of cobalt, 1876, ii., 551.  
 — physical properties of gallium, 1877, i., 48.  
 — reactions of gallium, 1877, i., 167.  
 — crystals of gallium, 1877, i., 442.  
 — the equivalent of gallium, 1878, A., 646.  
 — alloys of aluminium and gallium, 1878, A., 704.  
 — spectrum of ytterbium, 1879, A., 861.  
 — spectrum of erbium nitrate, 1879, A., 862.  
 — samarium, a new metal from samarskite, 1879, A., 889.  
 — researches on erbium, 1880, A., 6.  
 — anhydrous gallium chlorides, 1881, A., 1103.  
 — reactions of gallium salts, 1882, A., 364.  
 — gallium oxychloride, 1882, A., 698.  
 — colouring matter formed in flour paste, 1882, A., 739.  
 — separation of gallium, 1882, A., 897, 1323.  
 — decomposition of gallium protochloride by water, 1882, A., 1167.
- Boisbaudran, Paul Emile, Lecoq de**, and **Emile Cl. Jungfleisch**, extraction of gallium, 1878, A., 374.  
 — gallium, 1878, A., 556, 837.
- Boisbaudran, Paul Emile, Lecoq de**. See also **John Lawrence Smith**.
- Boivin, E.**, and **Désiré Loiseau**, influence of boiling distilled water on Fehling's solution, 1875, 482.
- Bókay, A.**, digestibility of nuclein and lecithin, 1879, A., 814.
- Bokorny, Thomas**. See **Oscar Loew**.



- Bolas, Thomas**, chlorination and iodination of anthracene, 1874, 64.  
 — ferrous anhydrosulphate, 1874, 212.  
 — testing for nitric acid and its colorimetric estimation, 1874, 387.  
 — use of incandescent lamps for photographic purposes, 1882, A., 1240.
- Boldt.** See **Jeverson**.
- Bollert, A.** See **Carl Theodor Liebermann**.
- Bolton, Henry Carrington**, action of organic acids on minerals, 1877, ii., 358; 1881, A., 62, 642.  
 — action of iodine, &c. on natural sulphides, 1878, A., 940.
- Bolton, Henry Carrington.** See also **Henry Morton**.
- Boltzmann, Ludwig**, remarks on the conduction of heat in gases, 1876, ii., 38.  
 — on the equilibrium of temperature in gases on which external forces act, 1876, ii., 38.
- Bomasch, A.** See **Karl Birnbaum**.
- Bondonneau, Lucien**, dextrin, 1875, 247.  
 — feculometer for testing potato starch, 1875, 385.  
 — amylogen or soluble starch, 1875, 629.  
 — saccharification of amylaceous substances, 1876, i., 365.  
 — iodide of starch, 1878, A., 22.
- Boner, Heinrich.** See **Richard E. Meyer**.
- Bong, Gaston**, purple colouring matter derived from cyanogen, 1875, 565.  
 — on the prussiates, 1876, i., 907.  
 — methods for the analysis of silicates by means of oxide of lead, 1878, A., 336, 915.  
 — a manganese blue, 1878, A., 558.  
 — a chromium blue, 1878, A., 618.  
 — residue from the manufacture of paraffin oil from schists, 1881, A., 208.
- Bonné, Julius**, benzoylacetacetic ether, 1877, ii., 437.
- Bonné, Julius**, and **Hermann Goldenberg**, silver compounds of biuret, 1874, 683.
- Bonney, Thomas George**, the cherzolite, or olivine rock of the Ariège (Pyrenees), 1878, A., 280.
- Bonnier, Gaston**, development of heat during germination, 1882, A., 212.
- Bonnier, Gaston.** See also **Philippe Edouard Léon van Tieghem**.
- Bontemps**, use of black oxide of manganese in glass making, 1874, 718.
- Borchers, Wilhelm**, a new method for estimating carbon dioxide in mineral waters, 1878, A., 917.
- Borchert, C. H.**, cast nickel plates, 1874, 832.
- Bordet, Lucien**, cork tar, 1881, A., 1040.
- Bordet, Lucien.** See also **Charles Bardy, Louis Paul Cailletet**.
- Borel, C., A. Leclerc, and Moreau**, experiments with manures, 1880, A., 570.
- Borgmann, Eugen**, estimation of glycerol in sweet wine, 1882, A., 1235.
- Borgmann, Eugen.** See also **Carl Theodor Ludwig Neubauer**.
- Borický, Emanuel**, minerals found in the neighbourhood of Walsch in Bohemia, 1874, 236.  
 — on some minerals from the Silurian iron-stone deposits, and the coal formation of Bohemia, resembling ankerite; and on the chemical constitution of the minerals classed with ankerite, 1877, i., 581.  
 — perowskite as a microscopical constituent of Bohemian nepheline-picrite, 1878, A., 279.
- Bornemann, Wilhelm**, iodine chloride, 1877, ii., 110.  
 — on iodine chloride, iodine bromide, and bromine chloride and their reactions with water, 1878, A., 11.
- Bornhardt, A.**, estimation of albumin in urine, 1877, ii., 368.
- Borns, H.**, *p*-dibromobenzenesulphonic acid and some derivatives, 1877, ii., 768.
- Bornträger, Arthur**, urine after administration of quinine and morphine, 1881, A., 192.  
 — detection of salicylic acid in urine, 1881, A., 472.
- Bornträger, Arthur.** See also **Rudolph Eduard Külz**.
- Bornträger, Hugo**, method for rapidly incinerating meal, 1879, A., 282.  
 — a new indicator for use in acidimetry and alkalimetry, 1879, A., 396.
- Borodin, Alexander P.**, condensation products of aldehydes, 1873, 58.  
 — a new derivative of valeral, 1874, 145.  
 — constitution of hydrobenzamide, and its conversion into amarine, 1874, 273.  
 — nitrosamarine, 1876, i., 269.  
 — action of nitric acid on deoxybenzoin, 1881, A., 813.
- Borodin, Ivan P.**, distribution and functions of asparagine in the vegetable kingdom, 1880, A., 58.  
 — respiration of plants, 1882, A., 641.

- Borodulin, N.**, action of silver nitrate on cane-sugar, 1873, 16.
- action of potassium permanganate on invert sugar, 1871, 211.
- estimation of mineral constituents in beet juice, 1874, 293.
- Borries, C. von**, composition of milk from the same cow on consecutive days, 1881, A., 762.
- Bothamley, Charles Herbert**, the Chloride of Iron Spa, Harrogate, 1881, T., 502.
- Bott, D. B.**, acid of willow bark, 1877, ii., 905.
- Bottler, Charles.** See *Adolph Claus*.
- Bottomley, James**, a case of reversed chemical action, 1875, 730.
- colorimetric experiments, 1879, A., 77.
- mean intensity of light that has passed through absorbing media, 1882, A., 1.
- colour relations of nickel, cobalt, and copper, 1882, A., 1.
- Bottomley, James Thomson**, on the thermal conductivity of water, 1881, A., 966.
- Bottone, S.**, relation between the atomic weight, specific gravity and hardness of the metallic elements, 1875, 232.
- Bouchard, A.** (and others), enemies of the vine, 1882, A., 328.
- Bouchardat, Gustave**, researches on dulcete and on sugars in general, 1873, 160.
- neutral compounds derived from mannite, 1873, 160, 747, 1123.
- the alcohols formed in the manufacture of starch, 1874, 833.
- specific rotatory power of mannite, 1875, 443; 1877, i., 449.
- synthesis of terpine, 1875, 1259.
- dry distillation of caoutchouc, 1876, i., 86.
- rotatory power of mannite and its derivatives, 1877, i., 449.
- formation of glycollic and pyruvic acids from tartaric acid, 1879, A., 916.
- identity of the hydrates of diisoprene, caoutchouc, and terpene, 1879, A., 1039.
- action of haloid acids on isoprene; formation of caoutchouc, 1880, A., 323.
- transformation of amylene and valerylene into cymene and hydrocarbons of the benzene series, 1880, A., 710.
- action of sulphuric acid on bromamylene, 1881, A., 1114.
- Bouchardat, Gustave.** See also *Charles Richet*.
- Boucherie, Maurice**, preservation of wood, 1874, 1189.
- Boucheron**, abnormal presence of uric acid in the saliva, gastric juice, and other secretions, 1881, A., 1161.
- Bouchut, E.**, enumeration of fat globules in milk as a test, 1880, A., 191.
- digestive ferment of the juice of the fig tree, 1880, A., 728.
- Bouchut, E.** See also *Charles Adolphe Wurtz*.
- Boudier**, foreign bodies in snow, 1877, i., 288.
- Bougarel, Charles**, new red colouring matter accompanying chlorophyll, 1877, ii., 790.
- phyllie acid, a new substance contained in the leaves of certain plants, 1877, ii., 905.
- Bouilhet, Henri.** See *P. Christoffe*.
- Bouillon, E.**, detection of fuchsine in wine, 1877, i., 234.
- Bougué.** See *Bunge*.
- Bouquet de la Grye, Jean Jacques Anatole**, density and chlorination of sea water taken by the "Travailleur" in 1881, 1882, A., 798.
- chlorination of sea water, 1882, A., 923.
- Bourcart, Robert**, action of ammonia on anthraquinonesulphonic acids, 1880, A., 263.
- Bourgeois, A.** See *Paul Schützenberger*.
- Bourgeois Léon**, crystalline barium chromate, 1879, A., 437.
- preparation of crystallized chromates, 1881, A., 352.
- Bourgeois, Léon.** See also *Auguste Michel-Lévy, Auguste Victor Louis Verneuil*.
- Bourgoin, Elme Alfred**, water in electrolyses is not decomposed by the current, 1873, 27.
- preparation and properties of oxymaleic acid, 1873, 377, 1021.
- action of bromine on dibromosuccinic acid, 1873, 621.
- transformation of succinic acid into maleic acid, 1873, 1127.
- the solubility of succinic acid in water, 1874, 358.
- tribromosuccinic acid, 1874, 786.
- purification of cerebrin, 1874, 993.
- isomerism of acetylene perbromide with tetrabromethylene hydride, 1875, 343.
- preparation and properties of di-oxymaleic acid, 1875, 356.
- action of chlorine on acetylene perbromide, 1875, 439.

- Bourgoin, Edme Alfred**, identity of bromacetylene perbromide and tribromacetylene bromide, 1875, 552.
- identity of the brominated derivatives of tetrabromethane with those of acetylene perbromide, 1875, 625.
- preparation of perchlorethylene, 1875, 746.
- distinction between the two chlorobromides of ethylene having the formula  $C_2Cl_4Br_2$ , 1875, 1245.
- chlorobrominated ethene chloride, 1876, i., 58.
- conversion of ordinary pyrotartaric acid into tribromethene hydrobromide, 1877, ii., 443.
- the action of bromine on pyrotartaric acid, 1878, A., 29.
- formation of allylene from bromocitrapyrotartaric anhydride, 1878, A., 126.
- dipyrotartaracetone, a product of the action of heat on tartaric acid, 1878, A., 488.
- solubility of organic acids in alcohol and ether, 1878, A., 721.
- solubility of salicylic and benzoic acids, 1878, A., 879; 1880, A., 471.
- bromocitraconic acid, 1879, A., 457.
- elimination of bromine from bromocitraconic acid, and on a new organic acid, 1879, A., 1037.
- electrolysis of malonic acid, 1880, A., 462.
- preparation of malonic acid, 1880, A., 801.
- action of bromine on malonic acid, 1881, A., 155.
- action of potassium cyanide on potassium trichloracetate, 1882, A., 711.
- Bourgoin, Edme Alfred**, and **Claude Verne**, the presence of an organic alkali in boldo, 1873, 179.
- Bourgoin, Edme Alfred**. See also **Edmond Reboul**.
- Bourrée**, toughened glass, 1878, A., 99.
- Boussingault, Jean Baptiste Joseph**, amount of iron in the blood and in foods, 1873, 288.
- distribution of iron in the constituents of the blood, 1873, 398.
- nitrification of vegetable earth, 1873, 725.
- the volcanic region of western South America, 1874, 562.
- researches on the conversion of iron into steel, 1874, 924.
- contributions of volcanic rocks to the formation and fertility of soils, 1875, 98.
- Boussingault, Jean Baptiste Joseph**, tincture of guaiacum as a test of the purity of Kirschenwasser, 1875, 292.
- on the limit of the carburization of iron, 1875, 789.
- comparative analyses of gluten biscuit and certain amylaceous foods, 1876, i., 765.
- silication of platinum and certain other metals, 1876, ii., 47.
- growth of plants destitute of chlorophyll, 1876, ii., 112.
- quantities of nitrates and of ammonia in the water of the Seine taken on the 18th of March, 1876, 1876, ii., 181.
- vegetation of maize commenced in an atmosphere free from carbonic anhydride, 1877, i., 224.
- experiments to demonstrate the conversion of sugar when added to fermenting must and marc of grapes, 1877, i., 358.
- crystals of magnetic oxide of iron formed in roasting a spathic mineral, 1877, i., 446.
- saccharine matter contained in the petals of flowers, 1877, i., 452.
- influence of soil on the nitrification of azotized organic substances in manures, 1877, i., 735.
- estimation of phosphorus in iron and steel, 1877, ii., 927.
- carburation of nickel by cementation, 1878, A., 472.
- chrome steel, 1878, A., 772; 1879, A., 286.
- composition of the milk of the cow-tree, 1879, A., 73.
- dissociation of barium dioxide, 1880, A., 610.
- saccharine matters in the fruit of the coffee plant, 1881, A., 127.
- the hot springs of the littoral chain of Venezuela, 1881, A., 563.
- rapid alcoholic fermentation, 1881, A., 652.
- dissociation of nitric acid by vegetation in the dark, 1881, A., 836; 1882, A., 327.
- analysis of wine from Jacquez grapes, 1882, A., 1145.
- presence of manganese on the surface of rocks, 1882, A., 1270.
- Boussingault, Jean Baptiste Joseph**, and **Augustin Alexis Damour**, on the cause of tumefaction of obsidian exposed at a high temperature, 1873, 856.
- Boutin, A.**, modifications produced by the phylloxera on the chemical principles of vines, 1875, 101.



- Boutin, A.**, comparative chemical composition of vines attacked by the phylloxera, 1875, 183.  
 — comparative analyses of roots of vines, 1877, i., 226.
- Boutleroff.** See **Butleroff**.
- Boutmy, E.** See **P. Brouardel**.
- Boutmy, H.**, researches on nitroglycerol, 1879, A., 1032.
- Bouton, A.** See **Henry Grandeau**.
- Boutroux, L.**, lactic fermentation, 1878, A., 566.  
 — fermentation of glucose, 1880, A., 863.
- Bouty, Edmond**, pressures produced by galvanic deposits, 1879, A. 576.  
 — measure of the thermoelectric electromotive forces developed by the contact of a metal and a liquid, 1881, A., 336.  
 — changes of volume accompanying electrolytic deposition of a metal, 1881, A., 671.  
 — polarisation of electrodes and conductivity of liquids, 1882, A., 912.
- Bouvet, A.**, electrochemical actions under pressure, 1879, A., 293.
- Bouvier**, new method of testing alcohol for fusel oil, 1873, 532.
- Bovet, V.**, antiseptic action of pyrogallol, 1880, A., 73.
- Bowie, Hamilton C.**, the proteid required by the average workman, 1880, A., 905.
- Bowman, Charles A.**, examination of commercial copaba, 1877, ii., 932.
- Bowman, William J.**, *Aspidium rigidum*, 1881, A., 1152.
- Bowrey, James John**, poisonous principle of *Urechites suberecta*, 1878, T., 252.
- Boymond, Mare**, sodium hypophosphite, 1880, A., 367.
- Brackebusch, Ernst**, derivatives of glycerin, 1874, 241.  
 — nitro-compounds of the allyl series, 1874, 573.
- Brackebusch, Fr.** See **Julius Post**.
- Bradbury, W. A.**, determination of sulphur in coke, 1878, A., 1005.
- Bradford, John M.**, bark of *Fraxinus americana*, 1882, A., 1150.
- Bräuning**, copper extraction at Oker in the Hartz, 1878, A., 815.
- Bräuninger, W.**, derivatives of Rhenish beechwood creosote, 1878, A., 146.
- Braga, J. F.**, analyses of some hair dyes, 1880, A., 772; 1881, A., 67.
- Braham, Philip**, silver sulphate, 1881, A., 354.  
 — analysis of a crystalline mercury salt, 1881, A., 355.
- Braham, Philip**, crystals produced by the action of metals sealed up in carbon bisulphide, 1882, A., 12.
- Brame, Charles**, use of baryta to obtain metallic arsenic from arsenious oxide and arsenic sulphides, 1881, A., 467.
- Brandenburg, Rudolf.** See **Heinrich Brunner**.
- Brandl, Josef**, chemical composition of the minerals of the cryolite group, 1882, A., 1176.
- Brandt, C. F.**, preparation of various chlorates by means of aluminium chlorate, 1873, 950.  
 — aniline-black, 1873, 1069.  
 — the green tint assumed by aniline-black, 1875, 1064.
- Branly, E.**, estimation in mechanical units of the quantity of electricity produced by a galvanic current, 1874, 332.
- Braun, Ferdinand**, the electric conductivity of fused salts, 1875, 30, 996.  
 — on the unipolar conduction of electricity through gas strata of different conductivity, 1876, i., 668.  
 — unipolar electrolytic conduction, 1879, A., 194.
- Braun, J.**, nickel speiss (*plucodin*), 1881, A., 228.
- Braun, O.**, the present state of the bisulphide of carbon industry, 1876, i., 978.
- Brauner, Bohuslav**, estimation of arsenic as magnesium pyroarsenate 1877, ii., 222.  
 — estimation of cobalt in cobalt potassium nitrite, 1877, ii., 511.  
 — atomic weight of glucinum, 1878, A., 704; 1881, A., 224.  
 — direct conversion of *isobutyl* iodide into trimethylearbinylamine, 1878, A., 779.  
 — action of silver cyanate on *isobutyl* iodide, 1880, A., 228.  
 — constitutional changes in the molecule of the *isobutyl* group, 1880, A., 229.  
 — contributions to the chemistry of rare earth metals, 1882, T., 68.  
 — formation of free fluorine, 1882, A., 8.
- Brauner, Bohuslav and John Isaac Watts**, specific volumes of oxides, 1881, A., 219.
- Braungart, R.**, estimation of pollen in hops, 1882, A., 1331.
- Bréal, Emile.** See **Pierre Paul Dehérain**.
- Bredt, Julius**, constitution of lactones, 1881, A., 34.

- Bredt, Julius**, action of nitric acid on fatty acids containing the isopropyl group, 1882, A., 162.
- Bredt, Julius**. See also *Rudolph Fittig*.
- Brefeld, Oscar**, researches on vinous fermentation, 1874, 707.
- remarks on Traube's memoir "on the behaviour of the alcoholic ferment in an atmosphere free from oxygen," 1875, 185.
- Breiholz, Heinrich**, amount of oil in grass seeds and its relation to their germination, 1880, A., 342.
- Breitenlohner, J.**, silicatisation of the soil, 1878, A., 456.
- Bremer, Gustav Jacob Wilhelm**, a new *d*-malic acid, 1875, 1252.
- the active malic acids, 1876, ii., 71.
- inactive malic acid, 1880, A., 462.
- Bremer, Gustav Jacob Wilhelm**. See also *Eduard Mulder*.
- Brenken, Oskar**, iodine trichloride, 1875, A., 999.
- examination of mineral oils, 1880, A., 589.
- Brenken, Oskar**. See also *Hans Hübner*.
- Brenning**, manuring of oats, 1880, A., 508.
- Bréon, René**, separation of minerals of greater density than quartz by means of fused mixtures of lead and zinc chlorides, 1880, A., 511.
- Breslauer, Max**, epichlorhydrin derivatives, 1880, A., 29.
- Bretet, H.**, new method of detecting plastered wines, 1876, i., 117.
- extracts of narcotic plants, 1880, A., 425.
- Breton, Henri**. See *François Marie Raoult*.
- Bretonnière, L.** See *E. Croissant*.
- Bretschneider, P.**, growth of sugar beets without soil, 1875, 1278.
- Breuer, August**, and *Ernst Carl Theodor Zincke*, action of dilute sulphuric acid on hydrobenzoin and isohydrobenzoin, 1877, i., 460; 1878, A., 320.
- styrolene alcohol, 1878, A., 885.
- a hydrocarbon from styrolene alcohol, 1878, A., 889.
- derivatives of the hydrocarbon  $C_{16}H_{12}$  from phenyl glycol, 1879, A., 327.
- compounds obtained from hydro- and isohydro-benzoin by the action of dilute sulphuric acid, 1880, A., 116.
- oxidation of benzoic and acetic carbinols, 1880, A., 645.
- Breuer, August**, and *Ernst Carl Theodor Zincke*, derivatives of the quinone from the hydrocarbon  $C_{16}H_{12}$ ; polymeric quinones, 1880, A., 665.
- behaviour of the hydroxy-quinone  $C_{16}H_9(OH)O_2$  on oxidation, 1882, A., 207.
- Breyman, E.**, crushed oats as fodder, 1881, A., 837.
- perishing of wheat, rape and clover in winter, 1882, A., 548.
- Brezina, Aristides**, development of the chief propositions in crystallography and crystalline physics, 1873, 857.
- strueverite, 1877, i., 702.
- herregrundite, a new basic copper sulphate, 1881, A., 524.
- autunite, 1881, A., 531.
- schneebergite, 1882, A., 150.
- preliminary notice of new or but little known meteorites, 1882, A., 153.
- Brieger, Ludwig**, volatile constituents of human excrement, 1878, A., 437.
- aromatic products of the putrefaction of albumin, 1879, A., 806.
- scatole, 1880, A., 258.
- detection of scatole, 1882, A., 559.
- certain constituents of pus from the human subject, 1882, A., 759.
- Brieger, Ludwig**. See also *Eugen Baumann*.
- Briem, H.**, influence of light on the yield of beet sugar, 1879, A., 1047.
- exhaustion of the soil by beetroot cultivation, 1879, A., 1050.
- manuring of beet, 1880, A., 185.
- influence of heat on the growth of beets and potatoes, 1881, A., 633.
- influence of light on the growth of beet, 1881, A., 930.
- loss of water from kidney beans when ripening, 1882, A., 243.
- increase of root and leaf of sugar beet during growth, 1882, A., 640.
- relation between the moisture of the soil and the germination of sugar beet seeds, 1882, A., 641.
- distribution of heat and rain during the period of growth of sugar beet, 1882, A., 990.
- manuring with osmose water, 1882, A., 993.
- Briem, H.** See also *Eugène Feltz*.
- Brier, C.**, and *L. Jehle*, experiments with various kinds of beet, 1881, A., 60.
- Brigel, Gustav**, sulphur springs at Losdorf in the Solothurn, Jura, 1873, 743.
- lead; its impurities and their influence on the technical use of the metal, 1873, 846.

- Brigell, Gustav**, examination of Kirschwasser, 1873, 1065.
- Brimmer, Carl**, action of rain on clover hay, 1879, A., 823.
- Brimmer, Carl**. See also *H. Birner*.
- Briosi, Giovanni**, the function of chlorophyll in the vine, 1877, i., 732.
- Briosi, Giovanni**. See also *Emanuele Paternò*.
- Britton, J. Blodget**, colorimetric estimation of combined carbon in steel, 1873, 295.
- composition of flue dust from furnaces, 1878, A., 351.
- Brix, Johann**, analysis of an edible earth from the Neograd district in Hungary, 1876, ii., 56.
- Brix, Richard**, constituents of "maracaibo" copaiba balsam and the commercial so-called copaiba and *m-copaiba* acids, 1882, A., 65.
- Brix, Richard**. See also *Hugo Weidel*.
- Broadhead, G. C.**, barite crystals from the "Last Chance Mine," Missouri, and goethite from Adair Co., Missouri, 1877, ii., 713.
- Broch, O. J., Etienne Henri Sainte-Claire Deville, and Jean Servais Stas**, measure made of a 10 per cent. iridium platinum alloy, 1881, A., 680.
- Brockhoff, F.** See *Anton Gauthier*.
- Brodie, (Sir) Benjamin Collins**, action of electricity on gases, 1873, 348.
- synthesis of formic aldehyde, 1874, 569.
- on the decomposition of the simple weight *x* effected by Victor Meyer, 1879, T., 673.
- obituary notice of, 1881, T., 182.
- Brögger, Woldemar Christofer**, idocrase near Drammen, 1877, ii., 119.
- occurrence of thomsonite at Låven, 1879, A., 605.
- the crystal system of mosandrite, 1879, A., 608.
- two furnace products, 1881, A., 353.
- the pegmatite veins of Moss and the minerals contained in them, 1882, A., 579.
- Brögger, Woldemar Christofer, and Gerhard vom Rath**, enstatite crystals from Kjørrestad, near Bamle, Norway, 1877, ii., 718.
- Brögger, Woldemar Christofer, and Hans H. Reusch**, occurrence of apatite in Norway, 1876, ii., 51.
- Brössler, Ignaz**, spontaneously inflammable hydrogen phosphide, 1882, A., 461.
- Brogie, A.**, behaviour of phosphényl chloride at a high temperature, 1877, ii., 453.
- Bronner**, the new aniline colour "rosa," 1873, 207.
- preparation of stannic chloride, 1873, 1274.
- use of Hempel's lamp for illustrating silver assay as a lecture experiment, 1879, A., 402.
- Broeckmann, Karl, and Karl Polstorff**, Schützenberger's oxymorphine, 1880, A., 408.
- — methylnorphine hydroxide, 1880, A., 408.
- Brossard-Vidal (Mlle.) E.** See *E. Maligand*.
- Brouardel, P., and E. Boutmy**, test to distinguish ptomaines from vegetable alkaloids, 1881, A., 749.
- Brough, John Cargill**, obituary notice of, 1873, 774.
- Broughton, John**, chemical examination of the bark of the *Azadirachta indica*, 1873, 1157.
- Brown, Alexander Crum, and J. Adrian Blaikie**, action of heat on the salts of trimethylsulphine, 1882, A., 592.
- — trimethylsulphine salts, 1882, A., 593.
- Brown, Alexander Crum, and Edmund Albert Letts**, an addition product of bromacetic acid and methyl sulphide, 1874, 980.
- Brown, Frederick Douglas**, the physical properties of homologues and isomerides, 1877, ii., 836.
- theory of fractional distillation, 1879, T., 547.
- the comparative value of different methods of fractional distillation, 1880, T., 49.
- volume of mixed liquids, 1881, T., 202.
- on the distillation of mixtures of carbon disulphide and carbon tetrachloride, 1881, T., 304.
- fractional distillation with a still-head of uniform temperature, 1881, T., 517.
- Brown, Frederick Douglas**. See also *Henry Edward Armstrong*.
- Brown, George**, phosphatic manures on turnips, a report of experiments carried out in Scotland in 1880, 1882, A., 653.
- Brown, Horace T.**, influence of pressure on fermentation, influence of reduced pressure on the alcoholic fermentation, 1873, 973.

- Brown, Horace T.** and **John Heron**, contributions to the history of starch and its transformations, 1879, T., 596.  
 — hydrolytic ferments of the pancreas and small intestines, 1880, A., 903; 1881, A., 114.
- Brown, J.**, theory of voltaic action, 1879, A., 426.
- Brown, James Campbell**, testing of butter for adulteration, 1873, 1064.  
 — on the agricultural chemistry of the tea plantations of India, 1875, 1217.  
 — composition of honey, 1878, A., 969.
- Brown, J. F.**, chloral hydrate and camphor, 1874, 723.
- Brown, James T.**, anthracene testing, 1877, i., 232.
- Brown, William George**, analysis of the ash of the ground-pea (*Arachis hypogaea*) as cultivated in Virginia, 1877, i., 225.  
 — a new niobium mineral from Amherst Co., Virginia, 1877, ii., 853.  
 — phillipium, 1879, A., 204.
- Brtnik-Uha, Anton**, perishing of wheat, rape, and clover in winter, 1882, A., 548.
- Bruce, A. Cameron**, obituary notice of, 1881, T., 189.
- Brücke, Ernst Wilhelm (Ritter) von**, the carbohydrates and the mode in which they are digested and absorbed, 1873, 394.  
 — a modification of Böttger's sugar test, 1876, ii., 116.  
 — contributions to chemical statics, 1878, A., 106.  
 — the absorption spectrum of potassium permanganate, and its application to chemical analysis, 1878, A., 242.  
 — detection of urea by oxalic acid, 1882, A., 901.
- Brückner, Aleris**, dinitrosulphocarb-anilide, 1874, 77.  
 — nitro-derivatives of sulphocarb-anilide, 1875, 166.  
 — dinitro-*p*-toluic acid, 1876, i., 925.  
 — monobromotoluic acid from *p*-toluic acid and bromine, 1876, ii., 85.  
 — oxidation of *isoxylene* to *m*-toluic acid, 1876, ii., 85.  
 — oxidation of nitrogenous methylated benzene derivatives, 1881, A., 93.
- Brügelmann, Gottfried**, new process for the estimation of sulphur and phosphorus in organic bodies, 1876, i., 743.  
 — estimation of sulphur in coal gas, 1877, i., 492, 741.
- Brügelmann, Gottfried**, volumetric estimation of sulphuric acid by barium chloride solution in acid liquids, 1877, i., 737.  
 — purification of the barium sulphate precipitate obtained in quantitative analyses, 1877, i., 737.  
 — new method for the gravimetric and volumetric estimation of phosphorus, arsenic, sulphur, chlorine, bromine, and iodine in organic substances, and in vegetable and animal compounds, as well as for the estimation of sulphur in coal gas, 1877, i., 739.  
 — volumetric estimation of arsenic acid and phosphoric acid by uranium solution, 1877, i., 741.  
 — lime, strontia, and baryta in the crystalline state, 1878, A., 471, 770.  
 — crystallized zinc oxide, 1878, A., 771.  
 — characteristics of the alkaline earths and of zinc oxide, 1880, A., 701.
- Brühl, Julius Wilhelm**, substitution amido- and phosphido-acids, 1875, 1020; 1876, i., 698.  
 — determination of vapour densities, 1877, i., 165.  
 — limits to the application of the method of determining vapour densities in the barometric vacuum, 1879, A., 499.  
 — purification of mercury, 1879, A., 508, 602.  
 — preparation of divaleryl, 1879, A., 520.  
 — relations between the physical properties of bodies and their chemical constitution, 1880, A., 293, 685; 1881, A., 15.  
 — chemical constitution of organic compounds in relation to their refractive power and density, 1880, A., 295, 781; 1881, A., 489.  
 — relation between the optical and thermic properties of liquid carbon compounds, 1882, A., 263, 445.  
 — preservation of exposed bronze monuments, 1882, A., 669.  
 — molecular refraction of methacrylic and crotonic acids, 1882, A., 827.  
 — molecular refraction of methyl and ethyl citraconates and mesaconates, 1882, A., 829.
- Brüning**. See **Meister**.
- Brüning, A.**, manufacture of rosaniline, 1873, 658.  
 — answer to Coumpier's remarks on the preparation of fuchsine without arsenic acid, 1874, 98.
- Brünings, C.** See **Heuri Pellet**.



- Bruère**, conversion of terebenthene into cymene, 1881, A., 39.
- Brugnatelli, Tullio**, a lecture experiment, and a means of quickly evaporating large quantities of liquid, 1878, A., 634.
- Brugnatelli, Tullio**, and **Pietro Pelleggio**, action of sulphur on calcium carbonate in presence of water, 1875, 735.
- Brugnatelli, Tullio**, and **E. Zenoni**, on an alkaloid found in damaged Turkey corn and in mildewed maize bread, 1877, i., 323.
- Brunck, Heinrich**, and **Carl Graebe**, action of soda on cast iron, 1881, A., 126.
- Bruneau, L.** See **Miron**.
- Brunnemann, C.**, an azoxybenzenesulphonic acid, 1880, A., 807.
- Brunner, August**, rapid colorimetric test for manganese in pig iron, steel, and iron ores, 1874, 604, 816.
- Brunner, Heinrich**, detection of digitalin and atropine, 1873, 1062.
- detection of picric acid in beer, 1874, 1017.
- action of nitriles on the haloïd ethers of benzyl, 1877, i., 466.
- vegetable acids of wine, 1877, ii., 883.
- desoxalic acid, 1879, A., 619.
- production of colouring matters from phenols and polyatomic alcohols, 1882, A., 784.
- Brunner, Heinrich**, and **Rudolf Brandenburg**, occurrence of succinic acid in unripe grapes, 1876, ii., 400.
- action of sodium on monochlorethene chloride, 1878, A., 211.
- methyl-violet and diphenylamine-blue, 1878, A., 313.
- formation of naphthalene and methyl-violet, 1878, A., 667.
- Brunner, Henry**, improvements in the manufacture of alkali, 1879, A., 422.
- Brunner, Karl**, chemical constituents of angelica root, 1876, i., 939.
- analysis of mineral superphosphates and of "phosphate précipité," 1880, A., 576.
- Brunner, Karl**. See also **Carl Senhofer**.
- Brunner, R.**, detection of sulphur, 1882, A., 553.
- Brunner, Theodore**, the composition of human milk, 1873, 927.
- Bruns, H. D.**, the chemical character of silaonite from Guanajuato, Mexico, 1878, A., 940.
- Brunton, Thomas Lauder**, and **Theodore Cash**, action of ammonia and its salts and of hydrocyanic acid on muscle and nerve, 1881, A., 1058.
- Brunton, Thomas Lauder**, and (*Sir*) **Joseph Fayrer**, cobra poison, 1880, A., 490.
- Brush, George Jarvis**, a compact angle-site from Arizona, 1873, 1205.
- durangite, 1877, i., 286.
- American sulphoselenides of mercury, 1881, A., 361.
- Brush, George Jarvis**, and **Edward Salisbury Dana**, new mineral species from Fairfield, Connecticut, 1879, A., 20; 1881, A., 229, 529.
- a new and remarkable mineral locality in Fairfield Co., Connecticut, U.S.A., 1879, A., 891.
- relation between childrenite and esphorite, 1881, A., 365.
- crystallised danburite from Russell, 1882, A., 150.
- Bruylants, Gustave**, distillation of colophony, 1876, i., 615.
- lecture experiment exhibiting the combinations of nitric acid with oxygen, 1876, i., 878.
- pimoric acid, 1877, ii., 341.
- essence of tansy, 1878, A., 157.
- products of the dry distillation of calcium pimarate, 1878, A., 504.
- proximate composition of certain volatile oils, 1878, A., 512.
- researches on essence of valerian, 1878, A., 799.
- essence of rosemary, 1879, A., 725.
- essence of marjoram, 1880, A., 50.
- essence of lavender and spike, 1880, A., 50.
- a new method for preparing hydriodic and hydrobromic acids, 1880, A., 89.
- Bubnow, N. A.**, the relation between nitrogen and phosphoric acid in Russian wheat and rye, 1878, A., 908.
- Buchanan, John Young**, laboratory experiences on board the *Challenger*, 1878, T., 415.
- the gases dissolved in sea water, 1878, A., 197.
- manganese nodules and their occurrence on the sea bottom, 1882, A., 369.
- oxidation of ferrous salts, 1882, A., 572.
- Buchheim, Rud.**, the active constituent of ergot of rye, 1876, i., 610.
- the elimination of acids through the kidneys, 1876, ii., 647.
- the pharmacological group of piperine, 1877, ii., 195.

- Buchheim, Rud.**, the pharmacological group of atropine, 1877, ii., 196.
- Buchka, Karl von**, reduction of acetophenone, 1879, A., 61.
- gallein and coerulein, 1882, A., 59.
- Buchka, Karl von**. See also *Hans Hübner*.
- Buchner, Georg**, researches on the behaviour of ferric chloride to albumin, 1882, A., 1141.
- Buchner, Hans**, artificial generation of spleen fungus, 1881, A., 59.
- Buchner, Ludwig A.**, preparation of acetic acid, 1873, 613, 957.
- the solubility of arsenious acid in water, 1873, 1006.
- spontaneous ignition of hay, 1874, 186.
- chemical observations on the water of the hot spring at Pfäfers in Switzerland, 1877, ii., 284.
- Buchner, Max**, on the detection of phosphorus in chemico-legal examinations, 1876, i., 757.
- analysis of the Morizquelle near Rohitsch in South Styria, 1876, ii., 57.
- analysis of the Tempelbrunnen at Rohitsch, 1877, ii., 176.
- wine analyses, 1878, A., 345.
- kaiser-oil, 1878, A., 623.
- amount of tartar in wines, 1878, A., 822.
- adulteration of beeswax, 1879, A., 675.
- Boghead coal from Resintta, 1881, A., 688.
- Buchner, Otto**, the meteoric iron of Hungen, 1879, A., 366.
- Buckingham, J. H.**, ammonium molybdate as a test for alkaloids, 1874, 715.
- Buckney, E.**, azo-compounds of nitro-*p*-toluidine, 1878, A., 863.
- Budde, E.**, on the deviations of gases, especially of hydrogen, from Mariotte's law, 1874, 646.
- notice on electricity in electrolytes 1876, i., 865.
- Buddel, Fr.**, importance of starch in Belladonna roots, 1882, A., 1126.
- Büchner, C.**, notes on the manufacture of sulphuric acid, 1875, 669; 1876, i., 118.
- Büchner, E. W.**, ultramarine, 1879, A., 597.
- red and yellow ultramarine, 1879, A., 885.
- Büchner, Ernst**, ultramarine, 1875, 44.
- diphenyl in a coal-tar oil, 1875, 637.
- Büchner, Ernst**. See also *Rudolph Fittig*.
- Bücking, Hugo**, crystal forms of epidote, 1880, A., 534.
- freislebenite from Hiedelaencina, Spain, 1881, A., 24.
- Bücking, Rudolph**, *p*-oxybenzaldehyde, 1876, ii., 296.
- Bührig**. See *Adolf von Baeyer*.
- Bührig, Heinrich**, preparation, atomic weight, and estimation of cerium free from didymium, 1876, i., 682.
- cerium aniline-black, 1879, A., 682.
- Bülow, von**, experiments with artificial manures, 1880, A., 506.
- Buff, Heinrich**, thermal conductivity and diathermancy of air and hydrogen, 1878, A., 261.
- rock crystal weights and measures, 1878, A., 769.
- Buhe, A.**, boiling and heating with gas, 1882, A., 115.
- Buisine, A.** See *Edouard Duvillier*.
- Buisson, Pierre Marine Alexandre**, and *Edouard Henri Ferray*, volumetric estimation of bismuth, 1874, 710.
- Bulk, Carl**, simple exhausting and compressing air pump, 1877, i., 682.
- Bullier, H.** See *Henri Pellet*.
- Bullock, Charles**, preparation of pulverisable extract of *Nux vomica*, 1875, 388.
- does *Veratrum viride* contain an alkaloid other than jervine? 1876, ii., 530.
- *Veratrum viride*, 1880, A., 170.
- Bunge, Gustav**, the importance of common salt and the behaviour of potassium salts in the human body, 1873, 1042.
- soda as a constituent of plants, 1874, 910.
- simplification of Bunsen's method of estimating urea, 1875, 105.
- the amount of potassium, sodium, and chlorine contained in milk compared with those in other foods, and with the total amounts in sucking animals, 1875, 471.
- quantitative analysis of blood, 1877, i., 215.
- behaviour of potassium salts in the blood, 1879, A., 816.
- Bunge, Nikolai A.**, electrolysis of oxalic acid, 1876, ii., 286.
- electrolysis of aqueous solutions of oxalic acid, 1877, i., 455.
- electrolysis of aqueous solutions of formic acid, 1877, ii., 311.
- composition of beet root gum, 1879, A., 912.
- electrolysis of formic and mellic acids, 1881, A., 798.



- Bungener, Henry.** See *Carl Graebe*.
- Bunsen, Robert Wilhelm,** spectrum analysis, 1876, i., 665.
- Bunte, Hans,** determination of boiling points at the normal pressure, 1873, 1103.
- on aldehyde-sulphites and the action of sodium sulphite on ethidene dichloride, 1874, 353.
- on the constitution of hyposulphurous (thiosulphuric) acid, 1874, 770.
- determination of hydrogen in gas analysis, 1878, A., 808.
- analyses of furnace gases, 1881, A., 939.
- Bunte, Hans.** See also *Emil Erlenmeyer*.
- Burcker, E.,** preparation of the double carbonate of uranium and ammonium, and separation of iron and uranium, 1878, A., 771.
- synthesis of benzoylpropionic acid, 1881, A., 273.
- preparation of phenyl propyl ketone, 1882, A., 612.
- benzhydroxypropionic acid, 1882, A., 618.
- an aldehyde ketone and a glycol of the aromatic series, 1882, A., 730.
- Burdon Sanderson, John Scott,** on the electrical phenomena which accompany irritation of the leaf of *Dionaea muscipula*, 1874, 427.
- electromotive properties of the leaf of *Dionaea*, 1882, A., 638.
- Burfitt,** composition for preventing boiler incrustation, 1876, i., 134.
- Burg, E. A. van der,** ash of light coloured cod-liver oil, 1881, A., 124.
- analysis of iodine-iron cod-liver oil, 1881, A., 124.
- decomposition of cyanides, 1882, A., 102.
- Burg, Otto,** lignite tar, 1877, i., 96.
- picene, a new hydrocarbon from peat tar, 1881, A., 179.
- Burg, Otto.** See also *Carl Theodor Liebermann*.
- Burger, H.,** spectroscopic investigation of the constitution of liquids, 1879, A., 101.
- Burger, Rob.,** exhaustion of the soil by beet root cultivation, 1879, A., 1050.
- Burgerstein, Alfred,** influence of nutritive material on the transpiration of plants, 1880, A., 335.
- Burghard, August Philipp,** dibromobenzoic acid, 1875, 892.
- Burghardt, Charles A.,** note on the crystalline forms of meconic and  $\alpha$ -pimelic acids, 1874, 937.
- Burghardt, Charles A.,** the origin of some ores of copper, 1879, A., 17.
- occurrence of diopside on chrysocolla from Peru, 1879, A., 30.
- Buri, Eugen,** contributions to the knowledge of elemi: on amyrin, 1876, ii., 422.
- contribution to the chemistry of elemi: on elemic acid, 1878, A., 439.
- testing for morphine, 1878, A., 755.
- ethereal oil of *Thymus Serpyllum*, 1878, A., 792.
- Japanese wax, 1879, A., 1037.
- analysis of the mineral water of Niederbronn in Unter-Elsass, 1881, A., 80.
- Buri, Eugen.** See also *Friedrich August Flückiger*.
- Burkart, Hermann Joseph,** tellurium and bismuth ores in the United States, 1874, 31, 551.
- meteoric iron from Mount Descubridora near Poblazon in Mexico, 1874, 557.
- Burkhardt, G. A.,** oxyterephthalic acid, 1877, ii., 336; 1878, A., 73.
- Burkhardt, Jean Baptiste.** See *Adolf von Baeyer*.
- Burney, William J.** See *Thomas Samuel Humpidge, Ira Remsen*.
- Burstyn, M.,** estimation of zinc by means of a stream of hydrogen, 1873, 192.
- estimation of acid in fatty oils, 1873, 411; 1876, i., 769.
- water bath with self-acting draught, 1873, 472.
- detection of the oils of turpentine and rosemary in oils for the lubrication of machinery, 1875, 920.
- Burt, John C.,** additional examination of the third alkaloid of *Hydrastis canadensis*, 1876, i., 937.
- Burton, Beverley S.,** note on a phosphorus oxyiodide, 1882, A., 140.
- propyl derivatives and decomposition products of ethylic acetoacetate, 1882, A., 599.
- action of phosphorus pentachloride on ethylic acetoacetate, 1882, A., 711.
- Busch, Albert.** See *Robert Bind-schedler*.
- Busch, Julius,** action of potassium cyanide and of alcoholic potash on acetylchloral alcoholate and tetrachlorether, 1878, A., 487.
- Busch, William Charles A.,** the constituents of *Podophyllum peltatum*, 1878, A., 325.

- Busse, E.**, the constituents of tolu balsam, 1876, ii., 610.  
 — analysis of nickel and bronze money, 1878, A., 337.
- Butleroff, Alexander M.**, trimethyl-acetic acid, 1873, 48, 1020; 1874, 247, 1083; 1875, 248.  
 — properties of trimethylcarbinol, 1873, 369.  
 — preparation of methyl iodide and butyl iodides, 1873, 1014.  
 — preparation of trimethylcarbinol, 1873, 1119.  
 — chemical constitution of pinacolin, 1874, 245, 1081; 1875, 444.  
 — pentamethyl ethol, 1875, 1248.  
 — the milky juice of *Cynanchum acutum*, 1876, ii., 102.  
 — transformation of olefines into the corresponding alcohols, 1876, ii., 396.  
 — isodibutylene, 1877, i., 448; 1878, A., 121.  
 — action of zinc methyl on brom-acetyl bromide, 1877, ii., 588.  
 — action of dilute sulphuric acid on trimethylcarbinol, 1877, ii., 874.  
 — isotributylene, 1880, A., 230.  
 — alleged heating of ice under low pressures, 1882, A., 355.  
 — remarks on the atomic weights, 1882, A., 922.  
 — oxidation of isodibutylene by potassium permanganate, 1882, A., 936.
- Butleroff, Alexander M.**, and **Wladimir Gorjainoff**, solution of ethylene in sulphuric acid, 1873, 747.  
 — — polymerisation of hydrocarbons: trimethylcarbinol, 1873, 873.
- Butleroff, Alexander M.**, and **Alesci Wischnegradsky**, quinine and cinchonine, 1878, A., 988.
- Butleroff, Alexander M.** See also **Wladimir Gorjainoff**.
- Byasson, Henri**, decomposition of chloral hydrate by the combined action of glycerin and heat, 1873, 264.  
 — action of chloral on albumin, 1874, 591.  
 — maté or Paraguay tea, 1878, A., 440.  
 — trichloroacetal, 1878, A., 966.  
 — transformation of chloral into metachloral, 1881, A., 248.  
 — estimation of the nitrogenous constituent of urine, 1882, A., 1330.
- Byk, Siegmund**, removal of sulphur from guanidine thiocyanate, 1879, A., 614; 1880, A., 311.

## C.

- Cabell, J. Alston**, analysis of atacamite from Australia, 1874, 345.  
 — analysis of allanite from a new Virginian locality, 1874, 1144.  
 — composition of various specimens of iron produced in the working of Heaton's steel patent, 1874, 1188.
- Cabell, J. Alston.** See also **John Robin McDaniel Irby**.
- Cabot, S.**, decomposition of common salt by superheated steam, 1875, 1161.  
 — action of sulphur at high temperatures on normal paraffins, 1877, ii., 867.
- Cahn, Arnold**, physiological and pathological chemistry of the eye, 1882, A., 759.
- Cahours, Auguste André Thomas**, new propyl derivatives, 1873, 365, 871; 1874, 37.  
 — butyl derivatives, 1874, 348.  
 — researches on the sulphines, 1875, 1181; 1876, i., 696.  
 — researches on the substituted eugenols, 1877, i., 460; ii., 478.  
 — iodides of stannopropyl, 1879, A., 622.
- Cahours, Auguste André Thomas**, and **Eugène Anatole Demarcay**, on the hydrocarbons formed by distilling crude fatty acids with superheated steam, 1875, 1244; 1876, i., 363.  
 — — reciprocal action of oxalic acid and the monatomic alcohols, 1877, i., 183.  
 — — action of dehydrated oxalic acid on primary, secondary, and tertiary alcohols, 1878, A., 653.  
 — — stannopropyls and stannisopropyls, 1879, A., 918.  
 — — iodides of stannobutyl and stannamyl, 1879, A., 919.  
 — — acids obtained by distilling the crude acid from the saponification of fats in a current of superheated steam, 1879, A., 1036; 1880, A., 540.  
 — — formation of sebacic acid and suberic acid by the distillation of crude fatty acids, 1882, A., 715.
- Cahours, Auguste André Thomas**, and **Alexandre Léon Etard**, a new nicotine derivative, 1879, A., 732.  
 — — nicotine derivatives, 1880, A., 672.  
 — — a bromo-derivative of nicotine, 1880, A., 815.

- Cahours, Auguste André Thomas**, and **Alexandre Léon Etard**, nicotine, 1881, A., 288.
- action of selenium on nicotine, 1881, A., 825.
- Cailletet, C.**, a test for tartaric acid which distinguishes it from citric acid, 1879, A., 674.
- Cailletet, Louis Paul**, carbon dioxide, 1873, 350.
- hydrogenated iron, 1875, 425.
- influence of pressure on combustion, 1875, 1234.
- on the nature of the mineral substances assimilated by mushrooms, 1876, ii., 323.
- utilization of the gases issuing from metallurgical hearths, 1877, ii., 949.
- liquefaction of nitrogen dioxide, 1878, A., 10.
- liquefaction of acetylene, 1878, A., 20.
- compressibility of gases, 1879, A., 429.
- compression of gaseous mixtures, 1880, A., 604.
- use of liquid ethylene for producing low temperatures, 1882, A., 914.
- Cailletet, Louis Paul**, and **Lucien Bordet**, hydrates formed under pressure and by sudden expansion, 1882, A., 1163.
- Cailletet, Louis Paul**, and **Paul Hautefeuille**, liquefaction of gaseous mixtures, 1881, A., 676.
- changes of state near the critical temperature, 1881, A., 677.
- densities of liquid oxygen, hydrogen, and nitrogen in presence of inert liquids, 1881, A., 874.
- Cailliot, A.**, preliminary notice on pimaric acid, 1875, 457.
- Caillol, O.** See **Paul Cazeneuve**.
- Cairns, F. A.**, determination of phosphorus in pig iron and iron ores, 1877, ii., 800.
- Calderon, L.**, on the different rotatory powers exhibited by cane sugar, according to the process employed to measure it, 1876, ii., 427.
- resorcin, 1877, ii., 474, 613, 889.
- Caldwell, George Chapman**, milk testing with lactobutyrometer, 1881, A., 657.
- Calliess, Franz.** See **Adolph Claus**.
- Calm, Arthur**, vapour density of aqueous acids with constant boiling points, 1879, A., 579.
- Calm, Arthur**, constitution of parabanic acid, 1879, A., 620.
- conversion of  $\alpha$ - and  $\beta$ -naphthols into amidonaphthalenes, 1882, A., 972.
- amidoamylbenzene, 1882, A., 1284.
- Calm, Arthur**, and **Karl Heumann**, substituted azobenzenes, 1880, A., 880.
- Calmborg, Karl**, testing for carbonic acid in magnesia and zinc oxide, 1874, 100, 711.
- a reaction of codeine, 1876, i., 778.
- detection of atropine, 1876, i., 778.
- testing of red wine, 1878, A., 93.
- Calvert, Frederick Cruee**, on the power which certain substances possess of preventing putrefaction and the development of protoplasmic life and of Fungi, 1873, 405.
- influence of certain substances on the preservation of eggs, 1874, 175.
- obituary notice of, 1874, 1198.
- Camerer, William**, researches on tissue change in children, 1881, A., 189.
- feeding with milk, 1882, A., 636.
- tissue change on a milk diet, 1882, A., 749.
- Cameron, (Sir) Charles Alexander**, unusual amount of ammonia in a so-called spa water, 1873, 250.
- milk, 1875, 477.
- mercuric iodate, its preparation and reactions, 1876, ii., 479.
- estimation of colour in water, 1877, i., 231.
- estimation of lead as iodate, 1878, A., 1010; 1879, A., 484.
- the inconstant composition of well water, 1879, A., 485.
- amount of solids in milk, 1879, A., 490.
- preliminary notes on the absorption of selenium by plants, 1879, A., 955.
- sewage in oysters, 1881, A., 953.
- analyses of milk, 1881, A., 1176.
- physiological activity of super-oxygenated molecules, especially those of quinine iodate and bromate, 1882, A., 879.
- Cameron, (Sir) Charles Alexander**, and **Edmund William Davy**, action of heat on ammonium selenate, 1878, A., 933.
- new selenium compounds, 1881, A., 1099.
- Camichel and Henriot**, method of increasing the yield of potassium carbonate from molasses, 1877, ii., 816.
- Campani, Giovanni**, detection of grape and milk sugars, 1873, 534.

- Campani, Giovanni**, mutual action of potassium iodide and lead sulphate, 1877, i., 579.
- the manganese in ashes detected as manganese phosphate, 1877, ii., 223.
- preliminary note on amyl hippurate, 1878, A., 673.
- Campani, Giovanni**, and **Decio Bizzarri**, butyl and isobutyl hippurates, 1880, A., 870.
- tartaric acid produced by the oxidation of glycerol with potassium permanganate, 1881, A., 256; 1882, A., 818.
- Campbell, J. L.**, dufrenite from Rock-bridge Co., Virginia, 1881, A., 1111.
- Campbell, Louis**. See **Edmund James Mills**.
- Cannizzaro, Stanislaw**, methyl santonate, 1877, i., 470.
- derivatives of santonic acid, 1877, i., 470.
- analyses of four waters for Turin, 1880, A., 591.
- Cannizzaro, Stanislaw**, and **Domenico Amato**, on metasantonin and the action of hydriodic acid on santonic acid, 1875, 163.
- Cannizzaro, Stanislaw**, and **Giovanni Cernelutti**, the two isomerides of santonin called metasantonin, 1879, A., 330; 1881, A., 285.
- derivatives of santonin, 1881, A., 53.
- action of phosphorus pentachloride on santonic acid, 1881, A., 286.
- Cannizzaro, Stanislaw**, and **Fausto Sestini**, researches on santonin, 1873, 1229.
- Cannizzaro, Stanislaw**, and **Lorenzo Valente**, santonin derivatives, 1879, A., 331.
- Canto, Ernesto da**, influence of smoke on the development of blossom, 1880, A., 177.
- Cantoni, Gaetano**, influence of manures on the combustibility of tobacco, 1880, A., 117.
- Canzoneri, Francesco**, oxidation of the methyl ether of *p*-xylenol, 1881, A., 268.
- Canzoneri, Francesco**, and **Giovanni Spica**, researches on *Tarconanthus camphoratus*, 1882, A., 1040.
- Canzoneri, Francesco**. See also **Emanuele Paternò**.
- Capitaine, Ferd.**, cements for gas-retorts, 1875, 1301.
- preparation of soluble glass from fossil meal, 1877, i., 757.
- Caplan**, analysis of American moulded glass, 1878, A., 683.
- Capparelli, Andrea**. See **Domenico Amato**.
- Cappellini, G.** See **M. Sansoni**.
- Capranica, Stefano**, new guanine reaction, 1881, A., 655.
- reaction of bile pigments, 1882, A., 232.
- Capron, J. Rand.**, relative intensity of the spectral lines of gases, 1880, A., 685.
- Carius, Georg Ludwig**, the absorption of ozone by water, 1873, 472.
- decomposition of nitric acid by heat, 1874, 124.
- calcium glycolate, 1874, 786.
- behaviour of ozone with water and nitrogen, 1875, 40.
- the formation in nature of nitrous acid, nitric acid, and hydrogen peroxide, 1875, 128.
- Carius, Georg Ludwig**, and **Carl Frommüller**, attempts to obtain thallium triethyl, 1874, 676.
- Carl, Friedrich**, changes of ammonium isethionate at high temperatures, 1880, A., 28.
- isethionic acid, 1881, A., 581.
- Carles, P. P.**, distribution of the alkaloids in cinchona barks, 1873, 525, 931.
- Persian opium, 1874, 90.
- combination of lime and glycerin and its pharmaceutical application, 1874, 722.
- balsam of Tolu, 1874, 908.
- iron reduced by hydrogen, 1875, 195.
- presence of phosphorus and iodine in cod-liver oil, 1882, A., 673.
- estimation of tartaric acid in tartar and in wine lees, 1882, A., 1329.
- plastering and deplastering wines, 1882, A., 1336.
- yolk of egg, 1882, A., 1339.
- Carleson, J. A.**, on certain amides of the naphthylsulfonic acids, 1877, ii., 490.
- Carnelley, Thomas**, on the vanadates of thallium, 1873, 323.
- colorimetric method of determining iron in waters, 1875, 285.
- analysis of the waters of Trefriw, 1875, 436.
- effect of passing the mixed vapours of carbon disulphide and alcohol over red hot copper, 1875, 523.
- tolylphenyl, a new hydrocarbon, 1876, i., 13.
- on high melting points with special reference to those of metallic salts, Parts I., II., and III.: 1876, i., 489; 1877, i., 365; 1878, T., 273.



- Carnelley, Thomas**, on a colorimetric method for determining small quantities of copper, 1876, i., 751.
- action of water and of various saline solutions on copper, 1876, ii., 1.
- oxidation of ditolyl, 1877, ii., 653.
- relation between the melting points of the elements and their coefficients of expansion by heat, 1879, A., 588.
- action of heat on the mixed vapours of benzene and toluene: two new methylenediphenylenes, 1880, T., 701.
- Mendeléeff's periodic law and the magnetic properties of the elements, 1880, A., 206.
- vapour density of stannous chloride, 1880, A., 219.
- preliminary notice on the existence of ice and other bodies in the solid state at temperatures far above their ordinary melting points, 1881, A., 966.
- action of heat on mercuric chloride under low pressures, 1882, T., 317.
- chemical symmetry, or the influence of atomic arrangement on the physical properties of compounds, 1882, A., 458.
- Carnelley, Thomas**, and **Lucius Trant O'Shea**, tetrabromide of tin, 1878, T., 55.
- Carnelley, Thomas**, and **William Cartleton Williams**, on the determination of high boiling points, 1878, T., 281.
- on the boiling points of certain metals and metallic salts, 1879, T., 563.
- the melting and boiling points of certain inorganic substances, 1880, T., 125.
- Carnelley, Thomas**. See also **Frederic William Shaw**.
- Carnelutti, Giovanni**, ethylnaphthalene, 1881, A., 280.
- Carnelutti, Giovanni**, and **Raffaele Nasini**, alkannin, 1881, A., 53.
- optical rotary powers of santonin derivatives, 1881, A., 180.
- Carnelutti, Giovanni**, and **Lorenzo Valente**, estimation of glucose in urine, 1881, A., 315.
- Carnelutti, Giovanni**. See also **Stanislaw Cannizzaro**.
- Carnot, Adolphe**, some minerals from the bismuth lode of Meymae, 1874, 238, 1146.
- discovery of bismuth in France, 1874, 778.
- tungsten minerals from Meymae (Corrèze), 1875, 45.
- Carnot, Adolphe**, new process for the detection and estimation of potash, 1876, ii., 426.
- new salts of bismuth and their use in the detection of potash, 1877, i., 50.
- determination of potash, 1877, ii., 921.
- volumetric estimation of potash, 1878, A., 448.
- presence of lead in nitrate of bismuth, 1878, A., 473.
- mallardite, a new natural manganese sulphate, and luckite, a new variety of iron sulphate, 1879, A., 901.
- use of sulphuretted hydrogen in the dry way in analysis, 1879, A., 963.
- two varieties of diadochite found in the coal mine at Peychagnard (Isère), 1881, A., 999.
- a volcanic breccia useful for a top dressing, 1881, A., 1016.
- separation of aluminium from iron and chromium, 1881, A., 1081.
- use of chromium phosphate in analysis and in the arts, 1882, A., 998.
- Caro, Heinrich**, and **Carl Graebe**, rosolic acid and rosaniline, 1878, A., 794.
- rosolic acids, 1879, A., 59.
- Caro, Heinrich**, and **Conrad Schraube**, phenolbisdiazobenzene, 1879, A., 148.
- Caro, Heinrich**. See also **Adolf von Baeyer**, **Carl Graebe**.
- Caro, L.**, ferrous sulphate precipitated by alcohol, ammonio-ferrous sulphate, and potassio-ferrous sulphate, 1873, 246.
- Caro, Ludw. F.**, constitution of chalybeate waters containing lime, 1874, 781.
- Caron, H.**, new method of tempering steel: regeneration of burnt iron, 1874, 196.
- Carpené, A.**, new method of estimating tannic acid in wines, 1875, 1054.
- Carpenter, William Lant**, Bock's process for the production of stearic and palmitic acids, 1873, 658.
- Carpentier, J.** See **Charles Cros**.
- Carpentin**, estimation of fatty acids in oils, 1881, A., 202.
- Carré, F.**, manufacture of carbon points for the electric light, 1877, ii., 270.
- Carrière, E. A.**, *Canna edulis sterilis* as food, 1882, A., 990.
- Carrington, Nelson T.**, ammonium molybdate, 1876, i., 192.

- Carstanjen, Ernst**, synthesis of oxaluramide, 1874, 568.
- quinones, 1877, ii., 614.
- action of neutral potassium sulphite on the quinones, 1877, ii., 892.
- phlorone and xyloquinone, 1882, A., 612.
- Carstanjen, Ernst**, and **Alexander-Ehrenberg**, mercury fulminate, 1882, A., 816.
- Carsten, H. J.**, manuring of oats on fen lands, 1880, A., 185.
- Carter, H. Vandyke**, structural composition of urinary calculi, 1873, 517.
- Casali, Adolfo**, a cheap chrome-green, 1875, 791.
- testing for sulphuric acid in wine or vinegar, 1881, A., 314.
- biliary acids in toxicological researches, and the chemical nature of Selmi's ptomaines, 1881, A., 1046.
- Casamajor, Paul**, estimation of potassium as acid tartrate, 1877, i., 341.
- amalgamation of iron and some other metals, 1878, A., 474.
- influence of temperature on the deviation of polarised light by solutions of inverted sugar, 1879, A., 832.
- rapid estimation of pure sugar in raw and refined commercial sugars, 1880, A., 64.
- action of bone-black on sugar solutions, 1880, A., 758.
- detection of starch sugar mechanically mixed with refined cane sugar, 1880, A., 758; 1881, A., 654.
- sulphuretted hydrogen, 1881, A., 876.
- correction of saccharimetric test by inversion, 1882, A., 105.
- detection of oleomargarine, 1882, A., 341.
- detection of starch sugar mixed with sugar house molasses, 1882, A., 429.
- volumetric estimation of copper and lead, 1882, A., 776.
- analysis of beet-root and sorghum, 1882, A., 898.
- Casamajor, Paul** (and others), adulteration of cane sugar with glucose, 1881, A., 1089.
- Cash, Thomas**. See *Thomas Lawler Brunton*.
- Caspers, C.**, anthracene testing, 1877, i., 347.
- Castan, Francis**, application of thermochemical theories to explosive bodies, especially gunpowder, 1874, 1050.
- estimation of minute quantities of soda in potassium nitrate, 1879, A., 399.
- Casthélaz, John**, tincture of iodine, 1882, A., 1010.
- Catillon, A.**, preparation of peptones, 1881, A., 449.
- Cauvet, Désiré**, evolution of carbonic anhydride by plant roots, 1881, A., 931.
- Cauvy, B.**, action of vineyard soil upon sulphuretted and alkaline solutions, 1875, 284.
- Cavazzi, Alfredo**, analysis of wheat plant ash, 1882, A., 548.
- Cayley, Arthur**, the mathematical theory of isomerides, 1875, 127.
- Cazeneuve, Paul**, microscopical examination of angustura bark, 1875, 101.
- production of metallic films on the surface of organic substances for the purpose of electro-deposition, 1876, ii., 450.
- researches on hæmatin, 1877, i., 326.
- action of sodium hyposulphite on the hæmatin of the blood, 1877, ii., 346.
- detection and estimation of salicylic acid in animal secretions, 1879, A., 488.
- estimation of glucose in the blood, 1879, A., 557.
- separation and estimation of hippuric acid, 1879, A., 748.
- transformation of acetic acid into glycollic acid by cupric oxide, 1880, A., 32.
- oxidation of formic acid and oxalic acid by ammoniacal cupric oxide, 1880, A., 235.
- decomposition of copper acetate in presence of water, 1881, A., 153.
- lactic acid fermentation in urine, 1880, A., 513; 1881, A., 928.
- excretion of uric acid by birds, 1882, A., 416.
- combination of camphor with aldehyde, 1882, A., 526.
- dichlorocamphor, 1882, A., 738.
- examination of methylated spirit, 1882, A., 1002.
- an isomeric dichlorocamphor, 1882, A., 1107.
- Cazeneuve, Paul**, and **O. Caillol**, rapid extraction of caffeine, 1877, ii., 344.
- extraction and estimation of piperidine in pepper, 1877, ii., 516.
- Cazeneuve, Paul**, and **Stanislas Cotton**, detection of methyl alcohol in ethyl alcohol, 1881, A., 197.
- Cazeneuve, Paul**, and **Léon Didelot**, dichlorocamphor, 1882, A., 864.



- Cazeneuve, Paul**, and **Imbert**, combination of chloral hydrate with camphor, 1881, A., 180.
- Cazeneuve, Paul**. See also *Emile Justin Armand Gautier, E. Latour*.
- Cazin, Achille**, spectrum produced by the electric spark in a compressed gas, 1878, A., 357.
- Čech, Carl Otakar**, behaviour of chloral hydrate under the simultaneous action of cyanate and cyanide of potassium, 1876, i., 376.
- amides of chloral, 1876, ii., 66.
- cyanocyanate of chloral, 1876, ii., 184.
- chloral cyanide-cyanate and its derivatives, 1877, i., 67.
- colouring matter of viridic acid, 1877, i., 478.
- the waste material of the parchment manufacture as a source of oxalic acid, 1877, ii., 380.
- action of amines on chloral, 1877, ii., 586.
- a new apparatus for heating substances in sealed tubes under high pressure, suitable for analytical and synthetical purposes, 1877, ii., 639.
- chloral hydrate, 1878, A., 22.
- dichloroacetanilide, 1878, A., 51.
- decomposition of taurine during the digestive process in birds, 1878, A., 82.
- addition of hydrogen cyanide to benzoylanilide, 1878, A., 408.
- action of trichlorolactic acid on urea, 1878, A., 852.
- kisjak, a fuel used in the South of Russia, 1878, A., 919.
- preparation of rosemary oil, 1879, A., 97.
- wild Croatian hops, 1880, A., 428.
- coffee oil, 1881, A., 100.
- investigation of the processes of decomposition occurring during the rotting of eggs, 1881, A., 110.
- disinfecting power of the chlorophenols, 1881, A., 126.
- colouring matter of *Rubus Chamomorus*, 1881, A., 129.
- Russian fruit and blackberry wines, 1881, A., 209.
- wines from cloudberry and cranberry, 1881, A., 331.
- hops of Southern Europe, 1881, A., 483.
- preparation of Braga beer, 1881, A., 857.
- valuation of hops, 1881, A., 946.
- Čech, Carl Otakar**, and **Boleslav Dehmel**, conversion of cyanamide into ammelide, 1878, A., 395.
- Čech, Carl Otakar**, and **Paul Heinrich Schwebel**, dichloroacetic acid, 1877, ii., 179.
- peculiar formation of phenyl isocyanide, 1878, A., 216.
- Čech, Carl Otakar**, and **Anton Steiner**, diethylic ether of xanthacetic acid, 1875, 1255.
- chlorobromacetic acid, 1876, i., 373.
- Ceresole, A. F. Maurice**, nitrosoacetone and acetoacetic acid, 1882, A., 1052.
- Cervello, Vincenzo**, active principle of *Adonis vernalis*, 1882, A., 1126.
- Chabrier, Ch.**, active properties acquired by some gases under the influence of the silent electric discharge, 1873, 29.
- direct determination of the degree of intensity of explosive mixtures: application of the method to gunpowder, 1874, 1023.
- Chamberland, Charles Edouard**, and **Pierre Paul Emile Roux**, non-existence of "*Microzyma creta*," 1881, A., 835.
- Chamberland, Charles Edouard**. See also *Jules Joubert*.
- Chambon, E.** phosphorus oxybromochloride, 1877, i., 274.
- action of ethoxyl compounds of phosphorus on phosphorus chlorides and phosphorous acid, 1877, i., 292.
- Champion, P.**, a substance extracted from a Chinese fungus, 1873, 283.
- general method of preparing nitric ethers, 1874, 886.
- Champion, P.**, and **Henri Pellet**, the various vibratory motions produced by detonants, 1873, 31.
- the decomposition of explosive bodies compared with the phenomena of supersaturation, 1873, 1103.
- analysis of glycerin, 1873, 1165.
- estimation of nitroglycerin in dynamite, 1873, 1165.
- testing of glycerins, 1874, 713.
- decomposition of Fehling's solution: titration of glucose in the presence of cane sugar, 1875, 666.
- equivalence of the alkalis in beetroot, 1875, 907.
- the acid equivalent of the alkalis for plants, 1875, 1216.
- nitrogen and ammonia in beetroots, 1876, i., 420.

- Champion, P.**, and **Henri Pellet**, note on explosives; influence of the fuse on compressed gun-cotton, 1876, i., 516.
- decomposition of nitrogen iodide and chloride, 1876, i., 518.
- note on copper sulphide and phosphide, 1876, i., 519.
- nitrocitric acid, 1876, i., 566.
- influence of the asparagine contained in the sugar liquors from beets and canes on the saccharimetric determination; destruction of the rotatory power of the asparagine; method of determination, 1876, ii., 215.
- equivalent substitution of mineral substances in animals and plants, 1877, i., 98.
- estimation of nitrogen tetroxide in organic substances: chemical composition of various gun-cottons, 1877, i., 228.
- nitrostearic acid, 1877, i., 590.
- estimation of phosphorus and arsenic by ammonium molybdate, 1877, i., 738.
- volumetric estimation of arsenic, 1877, i., 739.
- composition of gun-cotton, 1877, ii., 304.
- Champion, P.**, **Henri Pellet**, and **M. Grenier**, spectral analysis and the spectro-sodiometer, 1873, 934.
- Champonnois**, and **Henri Pellet**, manuring of sugar-beet, 1881, A., 938.
- Chancel, Gustave**, gummy matter in wine, 1876, i., 117.
- detection of the principal colouring matters used in the adulteration of wine, 1877, ii., 371.
- researches on azotised acids derived from the ketones, 1878, A., 964.
- nitro-acids derived from ketones, 1882, A., 710.
- dinitro-derivatives from ketones, 1882, A., 824.
- Chancellor, Horatio**, manuring of wheat, barley and oats with saltpetre, 1881, A., 938.
- Chancourtois, A. E. Béguyer de**, on native iron, 1878, A., 475.
- Chaper, M.**, mode of occurrence of gold in certain minerals from the United States, 1881, A., 687.
- Chapman, Edward John**, blowpipe reactions, 1877, i., 489; ii., 216.
- Chapman, Ernest Theophron**, obituary notice of, 1873, 775.
- Chapoteaut, P.**, gastric juice, 1882, A., 1220.
- Chappuis, E.**, action of ozone on germs contained in the air, 1881, A., 632.
- Chappuis, James**, absorption spectrum of ozone, 1881, A., 213; 1882, A., 1017.
- phosphorescence, 1881, A., 670.
- absorption spectrum of nitrogen tetroxide (*pernitric anhydride*), 1882, A., 1017.
- Chappuis, James**. See also **Paul Haute-feuille**.
- Chapuis, A.**, and **Georges Linossier**, presence of lead in bismuth subnitrate, 1879, A., 80.
- Chardon, Alfred**, dry plates with uranium bromide, 1873, 424.
- the oleo-resin of the sunflower, 1874, 176.
- Chardonnet, E. de**, absorption of the ultra-violet rays, 1881, A., 1091.
- Charles, J. F.**, gases of the bile, 1882, A., 754.
- Charlesworth, Thomas**, obituary notice of, 1877, i., 493.
- Chase, A. W.**, calcium borate from Oregon, 1873, 1206.
- Chastaing, Paul L.**, effect of light on chemical actions, and especially on oxidation, 1877, ii., 818.
- constitution of morphine, 1881, A., 921; 1882, A., 413.
- oxidation products of morphine, 1882, A., 73.
- formula of pilocarpine, 1882, A., 75.
- pilocarpine, 1882, A., 744.
- action of acids on pilocarpine, 1882, A., 1115.
- Chatard, Thomas M.**, washing of gelatinous precipitates, 1873, 527.
- estimation of small quantities of manganese, 1873, 531.
- Chateau, Léon**, destruction of the noxious gases evolved in the manufacture of ammonia from liquid sewage, 1882, A., 115.
- Chatin, Adolphe**, causes of failure in the detection of small quantities of iodine, 1876, i., 960.
- Chaumont**. See **François de Chaumont**.
- Chautard, Jules**, spectrum of chlorophyll, 1873, 341, 1258; 1875, 171.
- spectroscopic examination of the chlorophyll in the residues of digestion, 1873, 521.
- modifications of the spectrum of chlorophyll under the influence of alkalis, 1873, 582.

- Chautard, Jules**, influence of light of various colours on the spectrum of chlorophyll, 1873, 713.  
 — spectral phenomena presented by different solutions of chlorophyll, 1873, 996.  
 — classification of the absorption bands of chlorophyll; accidental lines, 1873, 997.  
 — new supernumerary bands produced in solutions of chlorophyll under the influence of sulphuretted agents, 1874, 643.  
 — action of magnets on rarefied gases enclosed in capillary tubes and traversed by induction currents, 1875, 726.  
 — magneto-chemical phenomena in Geissler's tubes, 1876, i., 29.
- Chautard, Paul**. See *Philippe Henri Arnout de Clermont*.
- Chauzit, B.** See *A. Audouinaud*.
- Cheney, Margaret S.**, and (*Mrs.*) *Ellen H. Scallow Richards*, a new and ready method for the estimation of nickel in pyrrhotites and mattes, 1878, A., 244.
- Chesnel, Eug.**, new American process for making cheese, 1882, A., 124.
- Chester, Albert Huntington**, estimation of phosphoric acid in fertilizers, 1876, ii., 554.  
 — on a fibrous variety of sepiolite from Utah, 1877, ii., 852.  
 — identity of the so-called peganite of Arkansas with the variscite of Breithaupt, and with the callinite of Damour, 1877, ii., 852.  
 — note on the crystallization of variscite, 1878, A., 651.  
 — artificial crystals of gold and gold amalgam, 1878, A., 938.
- Chevreul, Michel Eugène**, occurrence of avic acid in guano, 1873, 1052.  
 — notes on guano, 1874, 90; 1875, 100.  
 — observations on Boussingault's researches on the conversion of iron into steel, 1874, 926.  
 — petrified wood, 1876, i., 534.  
 — on some combinations of ammonium chloride with the chlorides of potassium and sodium, 1877, ii., 839.
- Chiappe, P.**, and *O. Malesci*, preparation of the iodides of potassium and sodium, and of potassium bromide, 1877, i., 277.
- Chichkoff, Léon Nicol**, emulsion of butter, 1874, 932.  
 — chemical composition of milk, 1880, A., 273.
- Chittenden, Russell H.**, glycogen and glycocine in the muscular tissue of *Pecten irradians*, 1875, 1275.  
 — on some interesting equine calculi, 1876, i., 727.  
 — product of the oxidation of glycogen with bromine, silver oxide, and water, 1877, i., 64.
- Chittenden, Russell H.**, and *Henry Herbert Donaldson*, detection and estimation of arsenic in organic matter, 1881, A., 618.
- Chittenden, Russell H.**, and *John Stale Ely*, influence of peptones on the diastatic action of saliva, 1882, A., 1117.
- Chittenden, Russell H.**, and *William Loomis Griswold*, the diastatic action of saliva, 1882, A., 319.
- Chittenden, Russell H.**, and *Samuel Waldron Lambert*, arsenical bismuth subnitrate, 1882, A., 573.
- Chittenden, Russell H.** See also *Samuel William Johnson*.
- Chognard**. See *Seroz*.
- Chojnacki, C.**, synthesis of phenylallyl, 1873, 1029.
- Christenn, Gust.**, on the present methods of analysing milk, with especial reference to cows' and human milk, 1878, A., 248.
- Christensen, A.**, contribution to the examination of pilocarpine and its salts, 1882, A., 317.  
 — estimation of quinine as herapathite, 1882, A., 341.  
 — quassin, 1882, A., 1302.
- Christensen, Odin T.**, chromammonium compounds, 1881, A., 1104.
- Christiani, W.**, effect of manure on crops, 1879, A., 826.
- Christiansen, C.**, a new water air-pump, 1873, 131.  
 — colour dispersion of fuchsine, 1873, 236.
- Christiansen, C.** See also *Haldor Topsøe*.
- Christison, (Sir) Robert**, action of water on lead, 1873, 1006.
- Christoffe, P.**, and *Henri Bouilhet*, note on certain reagents by means of which surface colorations of various tints may be produced on bronzes; with especial reference to the recent communication of H. Morin, 1874, 1024.  
 — on nickel obtained from minerals from New Caledonia, 1876, ii., 484.
- Christomanos, Anastasios Karl**, new method of preparing diphenyl, 1876, i., 914.

- Christomanos, Anastasios Karl**, iodine trichloride, 1877, ii., 163.  
 — analysis of chrome iron ore, 1877, ii., 511.  
 — the specific gravity of iodine trichloride: a new method of determination for easily decomposable bodies, 1877, ii., 697.  
 — heat of absorption of hydrogen chloride by water: a lecture experiment, 1878, A., 7.
- Christy, S. B.**, genesis of cinnabar deposits, 1880, A., 221.
- Chrustschoff, Paul D.**, mixed sulphones, 1875, 162.  
 — ethylphenol- and ethylbenzene-sulphonic acids, 1875, 162.  
 — thermic study of succinic acid, 1880, A., 151.  
 — heat of solution of some mixtures of salts, 1882, A., 1257.
- Church, Arthur Herbert**, new analyses of certain mineral arsenates and phosphates, 1873, 101.  
 — waste products, 1873, 1256.  
 — analyses of native gold and silver, 1874, 879.  
 — on the composition of antunite, 1875, 109.  
 — the action of baryta on oil of cloves, 1875, 113.  
 — occurrence of aluminium in certain cryptogams, 1875, 283.  
 — occurrence of metallic tin in feeding cakes, 1875, 381.  
 — short notices of Cornish minerals: steatite—white mineral in silky crystals—native gold—native silver, 1875, 736.  
 — red chalk and red clay, 1875, 872.  
 — note on certain hydrates, 1876, ii., 271.  
 — researches on colein, 1877, i., 253.  
 — analyses of plants, 1877, ii., 210.  
 — new applications of glycerin in the laboratory, 1877, ii., 244.  
 — an ancient specimen of tin, 1877, ii., 854.  
 — variegated leaves, 1877, ii., 914.  
 — arsenic in tapers, 1877, ii., 922.  
 — destruction of leather by gas, 1877, ii., 949.  
 — chlorophyll, 1878, A., 987.  
 — a chemical study of vegetable albinism. Part I., 1879, T., 33.  
 — a chemical study of vegetable albinism. Part II.: respiration and transpiration of albino foliage, 1880, T., 1.  
 — Cape tea, 1881, A., 443.
- Church, Arthur Herbert**. See also *George William Wigner*.
- Church, John A.**, combustion in the blast furnace, 1879, A., 841.  
 — heat of the Comstock lode, 1880, A., 858.
- Ciamician, Giacomo Luigi**, distillation of some resins and resin acids with zinc dust, 1878, A., 438; 1879, A., 69; 1880, A., 39, 126.  
 — reduction products of elemi resin with zinc dust, 1879, A., 69.  
 — influence of temperature and pressure on the spectra of vapours and gases, 1879, A., 101, 685.  
 — spectra of the elements and their compounds, 1879, A., 685.  
 — products of the distillation of gum-ammoniac resin with zinc dust, 1880, A., 39.  
 — spectroscopic researches, 1880, A., 361; 1882, A., 349.  
 — aldehyde-resin, 1881, A., 247.  
 — some compounds of the pyrroline series, 1882, A., 212.
- Ciamician, Giacomo Luigi**, and *Léobaldo Danesi*, some derivatives of pyrocoll, 1882, A., 233, 875.
- Ciamician, Giacomo Luigi**, and *Mazimiliano Dennstedt*, derivatives of pyromucic acid, 1881, A., 801.  
 — action of chloroform on potassium pyrroline, 1881, A., 826.  
 — furfurylamine, 1881, A., 897.  
 — a third homologue of pyrroline in Dippel's oil, 1882, A., 529.  
 — action of halogenated organic radicles on potassium-pyrroline, 1882, A., 606.  
 — conversion of pyrroline into pyridine, 1882, A., 867, 1214.  
 — action of nascent hydrogen on pyrroline, 1882, A., 1214.
- Ciamician, Giacomo Luigi**, and *Paul G. Silber*, some derivatives of carbazole (*imidodiphenyl*), 1882, A., 1103.
- Ciamician, Giacomo Luigi**. See also *Guido Goldschmiedt*, *Hugo Weidel*.
- Cienkowski, L.**, organisms in beet sap, 1880, A., 334.
- Claassen, Edo**, phytolaccin, 1880, A., 412.
- Claassen, H.**, pentahalogen compounds of resorcin and orcin, 1878, A., 867.
- Clæsson, Johan Peter**, phenylsulphacetic and ethylsulphacetic acids, 1876, i., 959.



- Claësson, Johan Peter**, barium hydrate as an absorbent of carbon dioxide, 1876, i., 959.
- mercaptan, 1876, ii., 504.
- on the mercaptides and certain sulphides of ethyl, 1877, i., 585.
- behaviour of the sulphides of the alkali metals to hot water, 1877, ii., 111.
- action of sodium mercaptan on iodomethane, methyl iodide, and chloroform, 1877, ii., 293.
- ethyl mercaptan, 1877, ii., 294.
- ethylsulphinic acid, 1877, ii., 296.
- thioglycollic acid, 1877, ii., 595.
- action of potassium thiocyanate on compounds of monochloroacetic acids, 1878, A., 37.
- methyl and ethyl sulphates, 1879, A., 775.
- sulphates of mono- and poly-hydric alcohols and carbohydrates, 1879, A., 1033; 1880, A., 28.
- toluenetrisulphonic acid, 1881, A., 429.
- dithioglycollic acid, 1881, A., 580.
- characteristic colour reactions with sulphhydrates, 1881, A., 646.
- a compound of thiocyanacetic acid and carbaminethioglycollic acid, 1881, A., 715.
- thiocyanuracetic acid, 1881, A., 715.
- arabinose, 1881, A., 795.
- Claësson, Johan Peter, and Henrik Berg**, constitution of  $\alpha$ -toluenedisulphonic acid, 1880, A., 889.
- Claësson, Johan Peter, and Carl F. Lundvall**, action of ammonia and amines on ethyl and methyl sulphates, 1881, A., 240.
- Claësson, Johan Peter, and Karl Wallin**, toluenemonosulphonic acid, 1880, A., 256.
- Claësson, Johan Peter** (and others), on arabinose, erythrol, mannitol, etc., 1882, A., 819.
- Claisen, Ludwig**, mesityl oxide and phorone, 1875, 161.
- condensation products of acetone, 1876, i., 895.
- on the cyanides of acid radicles, 1877, ii., 423.
- properties of the acid  $C_9H_6O_3$  from benzoyl cyanide, 1877, ii., 616.
- amides of phenylglyoxylic acid, 1878, A., 151; 1879, A., 649.
- benzoic cyanide and phenylglyoxylic acid, 1879, A., 647.
- test for phenylglyoxylic acid, 1880, A., 67.
- Claisen, Ludwig**, condensation of aldehydes with ethyl acetate and malonate, 1881, A., 405.
- action of acetone on furfuraldehyde and on benzaldehyde in presence of alkaline solutions, 1882, A., 513.
- benzoic bromide, 1882, A., 514.
- Claisen, Ludwig, and Peter J. Antweiler**, some derivatives of trichloroacetyl cyanide; synthesis of isotrichloroglyceric acid, 1881, A., 153.
- cinnamyl cyanide and cinnamylformic acid, 1881, A., 169.
- Claisen, Ludwig, and Alexandre Claparède**, compounds of acetone and mesityl oxide with benzaldehyde: constitution of acetophorone, 1881, A., 422.
- condensation of ketones with aldehydes, 1882, A., 511.
- new method for the preparation of cinnamylformic acid, 1882, A., 520.
- Claisen, Ludwig, and Francis Edward Matthews**, on the action of haloid acids upon hydrocyanic acid, 1882, T., 264.
- Claisen, Ludwig, and Edward Ralph Moritz**, on the synthetical production of new acids of the pyruvic series, 1880, T., 691.
- propionylformic acid, 1881, A., 154.
- Claisen, Ludwig, and Henry Forster Morley**, new method of preparing phenylglyoxylic acid, 1879, A., 322.
- Claisen, Ludwig, and J. Shadwell**, conversion of acetyl cyanide into the corresponding ketonic acid, 1878, A., 568.
- synthesis of pyrrolic acid, 1879, A., 45.
- synthesis of isatin, 1879, A., 534.
- Claisen, Ludwig, and Claude Metford Thompson**, *m*-isatic acid (*m*-amido-phenylglyoxylic acid), 1880, A., 253.
- Claisen, Ludwig**. See also **Otto Wallach**.
- Clamond, C.**, a new thermoelectric battery, 1874, 861.
- Claparède, Alexandre**. See **Ludwig Claisen**.
- Clapham, Calvert**, obituary notice of, 1882, T., 236.
- Clark, John**, fossil eggs in guano, 1882, A., 1310.
- Clark, John**. See also **Julian Edmund Tenison-Woods**.
- Clark, Latimer**, on a voltaic standard of electromotive force, 1873, 472.
- Clarke, Frank Wigglesworth**, molecular heat of similar compounds, 1875, 1156.

- Clarke, Frank Wigglesworth**, molecular volume of crystallisation-water, 1875, 1157.
- note on molecular volumes, 1877, ii., 831.
- notes on some fluorides, 1877, ii., 839.
- notes on mineral analysis, 1877, ii., 916.
- some specific gravity determinations, 1878, A., 365; 1879, A., 295, 1004.
- iodates of cobalt and nickel, 1878, A., 377.
- sylvenite from Grand View Mine, Colorado, 1878, A., 383.
- electrolytic method of estimating mercury, 1878, A., 916; 1879, A., 976.
- certain new tartrantimonites, 1882, A., 1051.
- Clarke, Frank Wigglesworth**, and **William L. Dudley**, some selenocyanates, 1879, A., 35.
- Clarke, Frank Wigglesworth**, and **Eliot Abbott Kebler**, chromium barium oxalate, 1881, A., 576.
- some double and triple oxalates containing chromium, 1881, A., 1031.
- Clarke, Frank Wigglesworth**, and (*Miss*) **Mary Elizabeth Owens (Mrs. Hooker)**, a new form of tetrahedrite, 1881, A., 228.
- some new uranium salts, 1881, A., 1124.
- new compounds of platinum, 1882, A., 299.
- Clarke, Frank Wigglesworth**, and **Nelson W. Perry**, gunnisonite; a new mineral from Colorado, 1882, A., 1176.
- Clarke, Frank Wigglesworth**, and **Helena Stallo**, constitution of tartar emetic, 1881, A., 156.
- Clarke, Frank Wigglesworth**, and **David Stern**, salts of chromium and mercury, 1882, A., 293.
- Clarke, Frank Wigglesworth**. See also **Miles Beamer**, **William L. Dudley**.
- Classen, Alexander**, separation of manganese in the form of anhydrous sulphide, 1877, ii., 514.
- determination of manganese by precipitation as oxalate, 1877, ii., 804.
- separation of manganese from lime, 1877, ii., 805.
- separation of iron from manganese, cobalt, nickel, and zinc, 1877, ii., 924.
- estimation of cobalt, nickel, and zinc by precipitation as oxalate, 1877, ii., 924; 1879, A., 1054.
- Classen, Alexander**, dissolving ignited ferric oxide, 1878, A., 753.
- a new quantitative analytical method of manifold application, 1879, A., 969.
- separation of manganese from zinc, 1879, A., 1055.
- new method of separating ferric and aluminium oxides from manganese, 1879, A., 1055.
- electrolytic estimations and separations, 1882, A., 896.
- Classen, Alexander**, and **Moritz Adolf von Reis**, electrolytic estimations and separations, 1881, A., 1081.
- Claudet, Frederic**, new method for the extraction of the precious metals from copper pyrites, 1873, 97.
- Claus, Adolph**, preparation of dichlorhydrin, 1873, 1120.
- action of ammonia on dichlorhydrin, 1873, 1121.
- diiodhydrin, 1873, 1121.
- sulphurea, 1873, 1131; 1874, 573; 1876, i., 571.
- dichlorobenzoic acid, 1873, 1141; 1876, i., 252.
- azophenylene and azobenzoic acid, 1873, 1141; 1875, 646, 898.
- dichloroglycide, 1874, 243.
- thioprussiamic acids, 1874, 577; 1876, i., 572.
- uric acid, 1874, 578.
- pyruvic acid from allyl iodide, 1875, 555.
- action of potassium cyanide on organic chlorides, 1875, 564.
- distillation products of chlorhydrinimide, 1875, 633.
- azophenylene, 1875, 646, 898.
- action of sodium on citric acid, 1875, 750.
- the dioxyquinone of chrysene (*chryazarin*), 1875, 760.
- action of aniline on dichlorhydrin, 1875, 770.
- some new sulphurea compounds, 1875, 882; 1876, i., 934.
- oxyanthraquinone and alizarin, 1875, 891.
- hydrocitric acid, 1875, 1252.
- action of sodium amalgam on ethyl citrate, 1875, 1252.
- oxidation of tartaric acid by silver oxide in ammoniacal solutions, 1876, i., 65.
- decomposition of ammonium sulphocyanate, 1876, i., 571.
- chlorosulphurea and bromosulphurea, 1876, i., 572.
- bromethylsulphurea, 1876, i., 572.



- Claus, Adolph**, melamine, 1876, i., 574.  
 — potassium cyanide and organic haloid compounds, 1876, i., 934.  
 — simple preparation of propene, 1876, ii., 284.  
 — structure of cyanic and cyanuric acids, 1876, ii., 288; 1877, i., 67.  
 — action of alcoholic ammonia on substituted ureas, 1876, ii., 291.  
 — melamine sulphocyanate, 1877, ii., 309.  
 — conversion of ricinoleic acid into stearic acid, 1877, ii., 314.  
 — crotaconic acid, a new isomeride of itaconic acid, 1877, ii., 592.  
 — thiohydantoin, 1877, ii., 599.  
 — potassium cyanide and chloromaleic ether, 1877, ii., 739.  
 — anthraquinone, 1877, ii., 787.  
 — formation of dichloroacetic ether from chloral, 1878, A., 565.  
 — action of potassium cyanide on ethylic dichloroacetate, 1878, A., 721; 1881, A., 798.  
 — introduction of cyanogen groups into organic compounds and decomposition of organic cyanides, 1878, A., 855.  
 — cinchona alkaloids, 1879, A., 168; 1881, A., 183.  
 — nitrobenzoic acids, 1880, A., 647.  
 — cymenesulphonic acids, 1881, A., 174.  
 — quinoline, 1881, A., 287.  
 — cinchonidine, 1881, A., 620.  
 — quantivalence of carbon, 1881, A., 679.  
 — action of phosphorus pentachloride on acetyl- and benzoyl-diphenylamine, 1882, A., 178.  
 — sulphonic acids of 1:1-cymene, 1882, A., 196.  
 — diquinoline, 1882, A., 214.  
 — resorcinoxalein, 1882, A., 399.  
 — synthesis of homologues of aniline from bromaniline, 1882, A., 722.  
 — nitro- and amido-anthraquinone-sulphonic acids, 1882, A., 1165.  
 — constitution of benzene and naphthalene, 1882, A., 1196.  
**Claus, Adolph**, and **Andreae**, action of oxalic acid on resorcin at high temperatures, 1877, ii., 889.  
**Claus, Adolph**, and **C. Bätecke**, phenylhomocinchonidine, 1881, A., 184.  
**Claus, Adolph**, and **R. Bock**, methyl derivatives of homocinchonidine, 1881, A., 184.  
**Claus, Adolph**, and **Charles Bottler**, tolylquinines, 1881, A., 620.  
**Claus, Adolph**, and **Franz Calliess**, potassium cyanide and ethyl dibromosuccinate, 1878, A., 566.  
**Claus, Adolph**, and **C. Cratz**, *p*-cymene and sulphuric acid, 1880, A., 632.  
**Claus, Adolph**, and **M. Dannenbaum**, ethyl derivatives of cinchonidine, 1881, A., 183.  
**Claus, Adolph**, and **M. Dehne**, dichloronaphthalene and chloronaphthol from  $\beta$ -naphtholsulphonic acid, 1882, A., 734.  
**Claus, Adolph**, and **C. Diernfellner**, nitrobronanthraquinones, 1882, A., 522.  
**Claus, Adolph**, and **Karl Elbs**, amarine, 1880, A., 881.  
**Claus, Adolph**, and **R. Glassner**, strychnine, 1881, A., 747.  
**Claus, Adolph**, and **Franz Graeff**, action of sodium amalgam on  $\alpha$ -nitronaphthalenesulphonic acid, 1878, A., 73.  
**Claus, Adolph**, and **Wilh. Halberstadt**, *m-p*-dinitrobenzoic acid by nitration of *p*-nitrobenzoic acid, 1880, A., 647.  
**Claus, Adolph**, and **H. Hansen**, *o*-cymene, 1880, A., 631.  
**Claus, Adolph**, and **J. Helpenstein**, action of ammonia on ethyl dibromosuccinate, 1881, A., 577.  
**Claus, Adolph**, and **Albert Hertel**, anthraquinone derivatives, 1881, A., 737.  
**Claus, Adolph**, and **P. Himmelmann**, quinoline, 1881, A., 182.  
 — reduction of quinoline, 1881, A., 444.  
**Claus, Adolph**, and **Ernst Istel**, tetrabromoquinoline and diiodoquinoline, 1882, A., 1110.  
**Claus, Adolph**, and **H. Kemperdick**, ethyl derivatives of cinchonine, 1881, A., 289.  
**Claus, Adolph**, and **Aug. Lade**, action of bromine on *o*-nitrobenzoic acid, 1881, A., 814.  
**Claus, Adolph**, and **Richard Lindhorst**, action of bromine on dichlorhydrin and propylpycete, 1880, A., 862.  
**Claus, Adolph**, and **Gust. Lischke**, action of potassium cyanide on ethyl chlorisocrotonate, 1881, A., 800.  
**Claus, Adolph**, and **Fr. Mallmann**, methyl and ethyl derivatives of quinoline, 1881, A., 619.  
**Claus, Adolph**, and **Oscar May**, azophthalic acid, 1882, A., 15.  
**Claus, Adolph**, and **H. Müller**, methyl derivatives of cinchonine, 1881, A., 289.  
**Claus, Adolph**, and **H. Oehler**, action of phosphorus pentachloride on  $\alpha$ -naphtholsulphonic acid, 1882, A., 736.

- Claus, Adolph**, and **Paul Rautenberg**, decomposition of dimethylaniline methiodide and ethiodide by potash, and action of amyl bromide on dimethylaniline, 1881, A., 584.
- Claus, Adolph**, and **Eugène Risler**, reactions of benzidine, 1881, A., 605.
- Claus, Adolph**, and **Reiner Röhre**, brucine, 1881, A., 749.
- Claus, Adolph**, and **H. Schaare**, action of phosphorus pentachloride on benzoyldiphenylamine, 1882, A., 1060.
- Claus, Adolph**, and **Ludwig Spruck**, oxidation of pentachloronaphthalene, 1882, A., 1210.
- Claus, Adolph**, and **Th. Stüsser**, m-cymene, 1880, A., 632.
- Claus, Adolph**, and **W. Treupel**, benzyl derivatives of cinchonine, 1881, A., 290.
- Claus, Adolph**, and **Fritz Voeller**, action of ammonia on ethyl chloromaleate, 1881, A., 254.
- Claus, Adolph**, and **Max Völtzkow**, action of glacial acetic acid on phenylthiocarbimide, 1881, A., 591.
- Claus, Adolph**, and **Reich. Weiss**, action of potassium cyanide on dichloroacetic ether, 1878, A., 565.
- Claus, Adolph**, and **H. Weller**, cinchonidine, 1882, A., 227.
- Claus, Adolph**, and **C. Wimmel**, oxidation of dibromocymene, 1880, A., 632.
- Claus, Adolph**, and **O. Zimmermann**, action of phosphorus pentachloride on  $\beta$ -naphtholsulphonic acid, 1881, A., 914.
- Claus, Carl Friedrich**, improvements in the manufacture of sulphide and other compounds of zinc, and in the production of bye-products resulting therefrom, 1879, A., 423.
- Claus, Carl Friedrich**. See also *Roger William Wallace*.
- Clausius, Rudolph Julius Emanuel**, the relation between work effected by the diffusion of gases and the second law of thermodynamics, 1879, A., 3.
- behaviour of carbonic anhydride in relation to pressure, volume, and temperature, 1880, A., 691.
- Clausnizer, Friedrich**, action of sulphuric monochloride on the chlorides of titanium, antimony, tin and silicon, 1879, A., 201.
- sulpho-selenium oxytetrachloride, 1879, A., 201.
- experiments on the preparation of sulphuric bromide and sulphur tetrabromide, 1879, A., 354.
- Clausnizer, Friedrich**, sulpho-oxychlorides, 1879, A., 691.
- a new skimming process, 1880, A., 933.
- estimation of glycerol in beer, 1881, A., 470; 1882, A., 557.
- Cleaver, Edward Lawrence**, new method for the detection of alum in bread, 1874, 1101.
- estimation of fat in milk, 1876, i., 116.
- analysis of cinchona bark, 1876, i., 443.
- Cleaver, Edward Lawrence**, and **Matthew Whitley Williams**, extract of aconite and the alkaloid of *Aconitum paniculatum*, 1882, A., 635.
- Clémandot, L.**, action of light on phosphorescent bodies, 1881, A., 863.
- Clémandot, L.** See also *Edmond Fremy*.
- Clement, J. M.**, bleaching, 1882, A., 128.
- Clermont, Arthur**, trichloroacetic acid and its salts, 1873, 745; 1874, 785, 1154.
- a new process for the production of trichloroacetic acid, 1876, i., 697.
- trichloroacetic anhydride, 1878, A., 401.
- Clermont, J.**, the presence of hydrogen peroxide in the sap of plants, 1875, 1216.
- Clermont, Philippe Henri Arnout de**, some reactions of pyruvic acid, 1873, 495.
- sulphophenyl urea, 1876, ii., 92.
- on acetylpersulphocyanic acid, 1876, ii., 292.
- the action of alkaline sulphocyanates on the hydrochlorides of the alkaloids of the fatty series, 1877, ii., 309.
- action of ammoniacal salts on metallic sulphides and its application to mineral analysis, 1879, A., 672.
- Clermont, Philippe Henri Arnout de**, and **Paul Chautard**, oxidation of pyrogallol in presence of free acid, 1882, A., 839.
- oxidation of pyrogallol in presence of gum arabic, 1882, A., 970.
- purpurogallin, 1882, A., 1065.
- Clermont, Philippe Henri Arnout de**, and **Jules Frommel**, new method of separating arsenic from other metals, 1878, A., 608.
- dissociation of metallic sulphides, 1879, A., 13.
- magnesia as an antidote for arsenious acid, 1879, A., 77.
- aurin, 1879, A., 789.

- Clermont, Philippe Henri Arnout de**, and **Jules Frommel**, observations on sulphur baths, 1880, A., 196.
- Clermont, Philippe Henri Arnout de**, and **Henry Guiot**, sulphide of manganese, 1877, ii., 408, 708.
- dissociation of ammoniacal salts in presence of metallic sulphides, 1877, ii., 829.
- some general properties of metallic sulphides, 1877, ii., 842.
- tendency of manganese sulphide to oxidise, 1877, ii., 844.
- oxidation of metallic sulphides, 1878, A., 199.
- Clermont, Philippe Henri Arnout de**, and **Eugene Wehrlin**, two new thiocarbamides (*sulphureas*), 1877, i., 70.
- Cleve, Per Theodor**, occurrence of cuban in Sweden, 1873, 851.
- the ammoniacal platinum bases, 1874, 342.
- thorium salts, 1875, 234.
- lanthanum compounds, 1875, 337.
- researches on didymium, 1875, 340; 1882, A., 1165.
- sulphonaphthalide, 1876, ii., 81.
- two new modifications of dichloronaphthalene, 1877, i., 207.
- nitro- and amido-naphthylsulphonic acids and their derivatives, 1877, i., 208, 469.
- dichlorinated naphthalene corresponding with nitronaphthylsulphurous acid, 1877, i., 467.
- naphthalene derivatives, 1878, A., 153.
- on  $\delta$ -nitronaphthylsulphonic acid, 1878, A., 676.
- derivatives of  $\eta$ -dichloronaphthalene, 1878, A., 736.
- chlorostannates of the rare earths, 1879, A., 601.
- two new elements in erbia, 1880, A., 7.
- scandium, 1880, A., 7.
- derivatives of  $\eta$ -dichloronaphthalene;  $\delta$ -nitronaphthalenesulphonic acid, 1880, A., 47.
- erbium, 1880, A., 157; 1881, A., 350.
- oxidation products of cholic acid, 1881, A., 294, 749.
- Cleve, Per Theodor**, and **Otto Magnus Höglund**, the combinations of yttrium and of erbium, 1873, 136.
- Cleve, Per Theodor**, and **Herman Julius B. Juhlin-Dannfeldt**, action of phosphorus pentachloride on  $\beta$ -naphthol, 1876, ii., 81.
- Clewing, C.**, compounds of pyroracemic acid with the sulphites of the alkalis and alkaline earths, 1878, A., 783.
- Cloëtta, A.**, and **Eduard Schär**, estimation of phenol in urine, 1882, A., 106.
- Cloëz, Charles**, on a glassy mineral which forms on the rocks of the Mediterranean coasts, 1878, A., 943.
- proportion of potash to soda in natural waters, 1882, A., 372.
- abnormal crystals of citric acid, 1882, A., 498.
- Cloëz, Charles**. See also **Ferdinand Vigier**.
- Cloëz, François Stanislaus**, the hydrocarbons produced by the action of hydrochloric acid on cast iron and steel, 1874, 972.
- Bloch's feculometer for determining the amount of pure starch in potato-starch, 1874, 1015.
- on the fatty matter of the seed of the oil tree of China, 1876, i., 616.
- on the oil of *Elaeococca* and its solid modification produced by the action of light, 1876, ii., 102.
- modifications of elaeomargaric acid produced by light and heat, 1877, i., 454.
- on the normal presence of copper in the blood of wild graminivorous animals, 1877, ii., 246.
- nature of the hydrocarbons produced by the action of acids on white specular manganiferous cast iron, 1878, A., 481.
- formation of hydrocarbons by the action of water on a carbide of iron and manganese, 1878, A., 716.
- production of sodium carbonate by the action of magnesium carbonate on sodium chloride, 1878, A., 770.
- Cloud, T. C.**, atacamite, 1877, i., 284.
- determination of copper in "ore reducer" slag, 1877, ii., 650.
- Cloët, F.**, arsenic in grape sugar, 1879, A., 1077.
- Clowes, Frank**, diethyl  $\beta$ -ethylacetosuccinate, 1876, i., 565.
- Coad, Nicholas Gay Oates**, bismuth and its pharmaceutical preparations, 1876, i., 451.
- Coale, Robert Dorsey**, and **Ira Remsen**, oxidation of sulphamine-*m*-toluic acid in alkaline and in acid solution, 1881, A., 1038.
- Coale, Robert Dorsey**. See also **Ira Remsen**.

- Cobenzl, Albert**, separation of tungsten from antimony, arsenic and iron; and the analysis of a so-called pseudo-meteorite, 1881, A., 1171.
- action of nascent hydrogen on ellagic acid, 1882, A., 405.
- Cobenzl, Albert**. See also *Hugo Weidel*.
- Cochin, Denys**, non-existence of a soluble alcoholic ferment, 1879, A., 1046.
- alcoholic fermentation, 1880, A., 276, 277.
- nature of the alcoholic ferment, 1881, A., 928.
- Cocx, L. C. W.**, solubility of lime in water in reference to the prescription for aqua phagedœnica, 1879, A., 491.
- Cöllen, Theodor**, sulpho-*p*-chlorobenzoic acid, 1876, ii., 412; 1879, A., 155.
- Cöllen, Theodor**, and *Carl Böttinger*, sulpho-*p*-chlorobenzoic acid, 1877, i., 82.
- Cohen, Emil**, the meteorite of Zsadány, Temesvar, 1879, A., 609.
- lavas from Hawaii and other islands of the Pacific Ocean, 1881, A., 392.
- eklogite which occurs in the diamond mines of Jagersfontein, 1881, A., 552.
- Cohn, Emil**, resistance of polarised cells, 1881, A., 958.
- Cohn, Ferdinand**, the formation of cheese, 1876, ii., 342.
- Cohn, Ferdinand**, and *Benno Mendelsohn*, influence of the galvanic current on bacteria, 1880, A., 726.
- Cohné, S.**, formation of ozone by the contact of plants with peroxide of hydrogen, 1876, ii., 539.
- alcohol tables, 1880, A., 773.
- Colasanti, Giuseppe**, influence of the surrounding temperature on the tissue metamorphosis of warm-blooded animals, 1877, i., 327.
- a contribution to the theory of fever, 1877, i., 328.
- physiological action of curare poison, 1878, A., 526.
- Cole, Granville**, seleniobenzaldehyde, 1876, i., 397.
- Coleman, Joseph James**, on the methods in use for determining the value of vegetable and animal oils, 1874, 606.
- effects of pressure and cold on the products of the distillation of carbonaceous shales, 1875, 856.
- spontaneous combustion of oil, wool-waste, &c., 1878, A., 258.
- constitution of malt liquors and their influence on digestion and nutrition, 1878, A., 905.
- Colley, Al.**, action of fuming nitric acid on acetochlorhydrase, 1873, 612.
- Colley, Al.**, and *Vakovitch*, preparation of sucrose from glucose, 1881, A., 402.
- Colley, E.**, on a case of work produced by the electric current, 1877, i., 160.
- existence of a dielectrical polarisation in electrolytes, 1882, A., 789.
- external work in a closed circuit, 1882, A., 1156.
- Collie, John Norman**. See *Edmund Albert Letts*.
- Collier, Peter**, sugar from the stems of maize and sorgho, 1880, A., 834.
- development of sugar in sorgho, 1881, A., 634.
- analysis of a mineral resembling thorite, 1881, A., 1009.
- Collineau**. See *Savigny*.
- Collins, J. Henry**, henwoodite, a new mineral, 1877, ii., 282.
- enysite, a new mineral, 1877, ii., 282.
- occurrence of scorodite, pharmacosiderite, and olivenite in greenstone, 1877, ii., 283.
- duportilite, a new asbestiform mineral, 1879, A., 24.
- crysophite from St. Agnes, Cornwall, 1881, A., 360.
- penwithite, a new Cornish mineral, 1881, A., 389.
- Colombo, C.**, and *Pietro Spica*, on some derivatives of  $\alpha$ -toluic acid, 1875, 894.
- Colombo, C.** See also *Emanuele Paternò*.
- Colosi, E.** See *Mariano Mercadante*.
- Colson, Albert**, estimation of sulphur in natural sulphides, 1880, A., 139.
- action of sulphur on water, 1881, A., 21.
- extraction of phosphoric acids, 1881, A., 320.
- diffusion of solids, 1882, A., 357, 454.
- new carbo-silicon compounds, 1882, A., 933.
- Colson, Albert**. See also *Paul Schützenberger*.
- Comes, Orazio**, effect of light on transpiration in plants, 1882, A., 418.
- Commaille, Ant.**, parathionic acid and thioamyllic acid from the mother liquors of corallin, 1873, 278.
- note on corallin, 1874, 474.
- proteids, 1874, 992.
- process for separating cholesterin from fatty matters, 1876, i., 769.
- estimation and solubility of caffeine, 1876, i., 779.



- Comstock, William James**, analysis of tetrahedrite from Huallanca, Peru, 1880, A., 220.  
 — chemical composition of the pitchblende (*uraninite*) from Branchville, Conn., U.S., 1880, A., 530.  
 — analyses of some American tantalates, 1880, A., 531.  
 — analyses of onofrite from Utah, 1881, A., 361; 1882, A., 148.
- Comstock, William James**. See also *Oscar D. Allen*.
- Conechy, Ewing G. M.**, volatilizing point of metallic arsenic, 1880, A., 705.
- Conen, J.**, derivatives of triethyl citrate, 1880, A., 36.
- Coninck**. See *Oechsner de Coninck*.
- Conrad, C. P.**, constitution of antimonie acid, 1880, A., 94.
- Conrad, Max**, isopentyl (or *amyl*) acetoacetate, 1877, ii., 435.  
 — metallic alloacetoacetic ethers, 1878, A., 26.  
 — diethyl acetosuccinate and its derivatives, 1878, A., 137.  
 — synthesis of pyrotartaric acid from ethyldiacetic acid, 1878, A., 137.  
 — action of sodium on ethyl ethoxyacetate, 1878, A., 403.  
 — synthesis of phenylated fatty acids, 1878, A., 732.  
 — identity of  $\beta$ -acetopropionic acid and levulinic acid, 1879, A., 453.  
 — substituted malonic acids, 1879, A., 707.  
 — ethyl formyltricarboxylate, 1879, A., 918.  
 — synthesis of cinnamic and phenylacetic acids from ethyl malonate, 1881, A., 168.  
 — ethyl chloromalonate, 1881, A., 577.  
 — ethylic benzylchloromalonate, benzyltartronic and phenyllactic acids, 1882, A., 58.
- Conrad, Max**, and **Carl Adam Bischoff**, synthesis by means of ethyl malonate, 1880, A., 627.  
 — ethylic monochloromalonate and tartronic acid, 1882, A., 39.  
 — ethylic nitrosomalonate and its derivatives, 1882, A., 39.
- Conrad, Max**, and **Max Guthzeit**, barbituric acid, 1881, A., 1033.  
 — chloromalonie acid, and its derivatives, 1882, A., 947.
- Conrad, Max**, and **William Richard Eaton Hodgkinson**, new method of synthesis of aromatised fatty acids, 1877, i., 590.
- Conrad, Max**, and **Leonhard Limpach**, an improved mode of preparing substituted acetoacetic ethers, 1878, A., 781.
- Conrad, R.**, succinylidiurea, 1874, 791.
- Conrad, R.**, and **Ludwig Rudolph Friedrich Salomon**, sulphurethanes, 1875, 753.
- Conrad, William**, hippuric acid and its derivatives, 1877, ii., 484.
- Conroy, (Sir) John**, the dioxides of calcium and strontium, 1877, ii., 484.  
 — the light reflected from potassium permanganate, 1879, A., 425.
- Conroy, Michael**, adulteration of olive oil, 1881, A., 946.
- Constam, Emil Joseph**. See *Victor Meyer*.
- Contamine, G.** See *Benjamin Corenwinder*.
- Contejean, Ch.**, presence of sodium in plants, 1878, A., 681.
- Conti, C.** See *L. Alessandri*.
- Cooke, Isaac B.**, new mode of filtration, 1873, 1158.
- Cooke, Josiah Parsons**, apparatus for dissolving hydrogen sulphide under pressure, 1874, 19.  
 — the vermiculites, their crystallographic and chemical relations to the micas; together with a discussion of the cause of the variation of the optic angle of these minerals, 1875, 134.  
 — melanosiderite, a new mineral species, 1876, i., 54.  
 — new mode of manipulating hydric sulphide, 1877, ii., 701.  
 — atomic weight of antimony, 1880, A., 300, 704; 1881, A., 512; 1882, A., 367.  
 — argento-antimonious tartrate (*silver emetic*), 1881, A., 419; 1882, A., 389.  
 — oxidation of hydrochloric acid solutions of antimony in the atmosphere, 1881, A., 513.  
 — the boiling point of antimony iodide and a new form of air thermometer, 1882, A., 354.  
 — solubility of silver chloride in water, 1882, A., 427.
- Cooper, R. M.**, analyses of native wines of Virginia, 1876, i., 813.
- Cooper, William John**. See *James Alfred Wanklyn*.
- Coppet, Louis Casimir de**, supersaturated solutions of lactates, 1873, 165.  
 — on the causes of crystallisation in supersaturated solutions, 1873, 472.



- Coppet, Louis Casimir de**, on the existence of two isomeric modifications of anhydrous sodium sulphate, 1874, 337.  
 — observations relative to the last communication of Gernez on the efflorescence of the two hydrates of sodium sulphate, 1874, 773.  
 — confirmation of his theory of the condition of a supersaturated solution, 1874, 1132.  
 — theory of crystallisation, 1876, i., 184.  
 — heat developed by contact of water with anhydrous sodium sulphate, 1879, A., 589.
- Coppola, Michele**, electrolysis of glucosides, 1878, A., 677.  
 — artificial production of oligiste, 1880, A., 223.  
 — constituents of *Stercoronon resuvianum*, 1880, A., 382; 1882, A., 866.
- Coquillion, J. J.**, action of platinum and palladium on hydrocarbons, 1873, 1214.  
 — action of incandescent platinum on hydrocarbons, 1875, 1138.  
 — formation of aniline-black by electrolysis, 1876, i., 266, 817.  
 — process for estimating hydrocarbons, and especially marsh gas, in mines, 1876, ii., 428.  
 — the limits between which fire-damp can explode; and some new properties of palladium, 1877, i., 166.  
 — apparatus for estimating marsh gas in mines, 1877, ii., 806.  
 — dissociation of hydrocarbons by means of palladium wire, and on the similarity of these phenomena to those of catalysis, 1877, ii., 831.  
 — action of aqueous vapour on hydrocarbons at a red heat, 1878, A., 773.  
 — occurrence of marsh gas in old coal pit workings, 1878, A., 843.  
 — action of platinum wire on hydrocarbons, 1879, A., 302.  
 — action of aqueous vapour on carbonic oxide in presence of red-hot platinum, 1879, A., 880.
- Corbetta, Pietro**. See *Wilhelm Körner*.
- Corenwinder, Benjamin**, analysis of the Brazil chestnut, the fruit of *Bertholletia excelsa*, 1874, 88.  
 — Bancoul nuts, 1876, i., 97.  
 — presence of sugar in the leaves of beets, 1877, i., 336.  
 — the chemical composition and function of leaves, 1878, A., 595.  
 — on the banana, 1879, A., 479.
- Corenwinder, Benjamin**, and *A. Contamine*, researches on phosphoric acid in arable land, 1877, ii., 913.  
 — influence of the leaves on the production of sugar in the beet, 1878, A., 997; 1880, A., 336.  
 — new process of analysing commercial potash, 1880, A., 286.  
 — analysis of parsnips, 1880, A., 342.
- Corenwinder, Benjamin**. See also *Alfred Renouard*.
- Corne, Isidore**, new reaction of iodides and iodates, 1877, i., 491.  
 — action of phosphorus on iodates in presence of atmospheric oxygen, 1877, i., 578.  
 — reduction of iodates by phosphorus, 1879, A., 103.  
 — phosphorescence and oxidation of phosphorus, 1882, A., 1263.  
 — hypophosphoric acid, 1882, A., 1264.
- Cornu, Alfred**, dark lines of the solar spectrum and the constitution of the sun, 1878, A., 357.  
 — ultra-violet limit of the solar spectrum, 1879, A., 861.  
 — ultra-violet limit of the spectrum at various heights, 1880, A., 201.
- Cornwall, H. B.**, indium in American blendes, 1874, 34.  
 — notes on blowpipe analysis, 1876, ii., 554.  
 — gallium in American blendes, 1881, A., 997.
- Corsi, Arnaldo**, occurrence of prehnite in Tuscany, 1881, A., 26.  
 — notes on Italian minerals, 1882, A., 479.
- Cosack, Josef**, carbanides derived from the isomeric toluidines, 1880, A., 245.  
 — derivatives of the toluidines, 1880, A., 713.
- Cosiner, Carl**, derivatives of  $\beta$ -naphthylamine, 1881, A., 605.
- Cossa, Alfonso**, composition of the seeds of two varieties of cane, 1873, 402.  
 — composition of the ash of the leaves and fruit of the lemon tree, 1873, 402.  
 — on some properties of gypsum, 1873, 1202.  
 — action of light on chlorophyll, 1874, 643.  
 — germination of seeds in nitrous oxide, 1876, i., 97.  
 — presence of leucin in vetches, 1876, i., 421.  
 — study of the composition of some Italian minerals and rocks 1876, i., 752.

- Cossa, Alfonso**, magnesium fluoride, 1877, ii., 707.  
 — analysis of periclase, 1878, A., 115.  
 — molybdenite from Biella, 1878, A., 558.  
 — chemical researches on the minerals and rocks of the Island of Vulcano, 1878, A., 952.  
 — serpentine from Verrayes (Aosta), 1879, A., 362; 1881, A., 693.  
 — distribution of cerium, lanthanum, and didymium, 1879, A., 695; 1881, A., 224.  
 — cinders and lava from Etna, 1879, A., 904.  
 — didymium tungstate, 1881, A., 225.  
 — green garnet from Val Malenco, 1881, A., 235.  
 — rutile in gastaldite-eclogite from Val Tournanche, 1881, A., 370.  
 — corundiferous felspar of Biella in Piedmont, 1881, A., 384.  
 — peridotiferous diabase of Mosso in the Biellese, 1881, A., 388.  
 — euphotide of Elba, 1881, A., 537.  
 — composition of Tuscan serpentines, 1881, A., 1012.  
 — stilbite from the Myage Glacier, Mt. Blanc, 1882, A., 290.  
 — serpentine rocks of the St. Gothard, of the Bobbiese Apennine, and of Monteferrato, near Prato, 1882, A., 586.  
 — hieratite, a new mineral, 1882, A., 704.  
**Cossa, Alfonso**, and **Ettore Mattiolo**, Silurian rocks in the territorio d'Iglesias, Sardinia, 1882, A., 583.  
**Cossa, Alfonso**, and **Mario Zecchini**, cerium tungstate, 1880, A., 851.  
**Coste** (and others), contributions to the phylloxera question, 1882, A., 646.  
**Costelo, David**, gamboge, 1879, A., 1042.  
**Cotte, Elisee**, Lanfrey's improvements in the manufacture of certain explosive compounds, 1879, A., 422.  
**Cotton, Stanislas**, new colour reactions of ammonium phenate, 1875, 917.  
 — wine coloured by fuchsine, 1877, ii., 521.  
**Cotton, Stanislas**. See also **Paul Cazeneuve**.  
**Cottu, H.**, use of sour food for cows, 1879, A., 1050.  
**Coulter**, note on a new property of air, 1876, i., 186.  
**Coulter**. See also **Marcellin Berthelot**.  
**Counciler, Constantin**, allyl borate, 1876, ii., 394.  
**Counciler, Constantin**, boric ethers, 1878, A., 21; 1878, A., 774; 1879, A., 621.  
 — fluoborethylene, 1880, A., 230.  
 — methyl carbonate, 1881, A., 251.  
 — analysis of the ash of various parts of *Aster Amellus*, 1882, A., 887.  
**Counciler, Constantin**, and **Theodor Julius Reinhold von Schroeder**, Neubauer's relation between the reducing action of oxalic acid and tannin, 1882, A., 1238.  
**Coupier, Brünig's** new method of manufacturing rosaniline, 1873, 959.  
**Courtonne, H.**, solubility of sugar in water, 1878, A., 21.  
**Couttolenc, G.**, evaporation of glycerol, 1881, A., 1084.  
**County, Louis**, potassium permanganate as an antidote to the poison of Bothrops, 1882, A., 879.  
**County, Louis**. See also **A. d'Arsonval**.  
**Cownley, Alfred John**. See **Benjamin H. Paul**.  
**Cowper, Richard**, on the action of alcohol on mercuric nitrate, 1881, T., 242.  
 — on the solubility of glass in certain reagents, 1882, T., 254.  
 — analysis of a piece of oxidised iron from the condenser of H.M.S. *Spartan*, 1882, T., 256.  
**Cox, Edward T.**, extensive lodes of antimony oxide at Sonora, Mexico, 1881, A., 518.  
**Crafts, James Mason**, determination of ferric oxide by sodium thiosulphate, 1873, 1162.  
 — density of chlorine at high temperatures, 1880, A., 431.  
 — density of some gases at a high temperature, 1880, A., 434.  
 — vapour density of iodine, 1880, A., 788.  
 — variations in the coefficient of expansion of glass, 1880, A., 841.  
 — rise of the zero point in mercury thermometers, 1881, A., 4.  
 — defects of the mercurial thermometer, 1881, A., 5.  
 — cause of variation of the fixed points of thermometers, 1881, A., 342.  
 — depression of the zero point in mercurial thermometers, 1882, A., 913.  
**Crafts, James Mason**, and **Franz Meier**, vapour density of iodine at high temperatures, 1880, A., 433, 606; 1881, A., 221.  
 — method of measuring high temperatures, 1880, A., 509.

- Crafts, James Mason.** See also *Emil Ador, Charles Friedel.*
- Craig, William,** note on aloes, with special reference to the action of "changed aloin" and the "resin of aloes," 1875, 1272.
- Cratz, C.** See *Adolph Claus.*
- Credner, Hermann,** the granite veins of the granulite mountains of Saxony, 1876, i., 198.
- a new locality for alunite, 1878, A., 477.
- the red gneiss of the Saxon Erzgebirge, 1879, A., 361.
- Crenshaw, Spotswood Dabney,** stove-pipe deposits, 1877, i., 235.
- Crespi, P.,** derivatives of monobrom- and dibrom-anisic acid, 1882, A., 191.
- Cresti, L.,** detection of traces of copper, 1877, ii., 803.
- gas regulator for air baths, 1879, A., 294.
- Cretier, Henri,** elementary organic analysis by reduction, 1874, 921.
- Crié, Louis A.,** an amyloid substance peculiar to the "asques" of *Pyrenomyces*, 1879, A., 613.
- new instances of phosphorescence in plants, 1882, A., 422.
- Croissant, E., and L. Bretonnière,** new colouring matters, 1874, 932.
- Croll, Alex. Angus,** improvements in the manufacture of sulphate of alumina, 1879, A., 423.
- Crommydis, Constantin Z.,** determination of very small quantities of arsenic present in mineral and organic substances, 1876, ii., 114.
- easy method of preparing glycollic acid, 1877, i., 453.
- Cronander, A. W.,** combinations of phosphoric chloride with other chlorides, 1874, 338.
- Crook, William (Gustavus and others),** butter adulteration, 1880, A., 423.
- Crookes, William,** atomic weight of thallium, 1873, 355.
- illumination of the lines of molecular pressure, and the trajectory of molecules, 1879, A., 573.
- viscosity of gases at high exhaustions, 1881, A., 678, 971.
- discontinuous phosphorescent spectra in high vacua, 1881, A., 773, 957; 1882, A., 445.
- on heat conduction in highly rarefied air, 1881, A., 966.
- a fourth state of matter, 1881, A., 971; 1882, A., 266.
- Cros, Charles,** action of light of different colours on silver bromide impregnated with various organic colouring matters, 1879, A., 504.
- Cross, Charles, and J. Carpentier,** colour photography by tinting layers of coagulated albumin, 1882, A., 668.
- Cross, Charles Frederick,** normal primary heptyl alcohol, 1877, ii., 123.
- rehydration of metallic oxides, 1879, T., 796.
- chemistry of bast fibre, 1880, A., 666.
- new demonstration of carbonic anhydride in the breath, 1881, A., 1175.
- hydration of salts and oxides, 1882, A., 12.
- Cross, Charles Frederick, and Edward John Bevan,** the chemistry of bast fibres, 1882, T., 90.
- a new apparatus for the determination of melting points, 1882, T., 111.
- Cross, Charles Frederick, and Alfred F. Higgin,** on the decomposition of water by certain metalloids, 1879, T., 249.
- on the reaction of chromic anhydride with sulphuric acid, 1882, T., 113.
- Cross, Charles Frederick, and Shigetake Sugura,** action of the halogens at high temperatures upon metallic oxides, 1878, T., 405.
- Cross, Charles Frederick.** See also *Edward John Bevan, Shigetake Sugura.*
- Croullebois, Marcel,** determination of vapour densities, 1874, 648.
- heat disengaged by the union of sulphuric acid and water, 1877, ii., 824.
- Crova, André,** measurement of the electromotive force of batteries in absolute units, 1874, 756.
- spectrometric measurement of high temperatures, 1879, A., 293.
- Crow, John Kent,** hypovanadic oxide ( $V_2O_4$ ) and its compounds, 1876, ii., 453.
- derivatives of allylacetone, 1878, T., 53.
- Crozet,** occurrence of tinstone at Truro, 1878, A., 207.
- Crum Brown.** See *Brown.*
- Cugini, Gino,** colouring matters of *Boletus luridus*, 1877, ii., 791.
- Cumenge, E.,** guejarite, a new mineral species, 1881, A., 517.
- Cumenge, E., and Edmond Fuchs,** the state in which the precious metals exist in certain minerals, rocks, and artificial products, 1879, A., 509.
- Cunerth, O.,** a new toluidine, 1874, 902.
- a new nitrotoluidine, 1875, 82.

- Cuno, Ehler.** See **Karl Kraut.**
- Curie, Jacques,** and **Pierre Curie,** development of electric polarity by pressure in hemihedral crystals with inclined faces, 1881, A., 2.
- laws of the development of electricity by the action of pressure on tourmaline, 1881, A., 338.
- polar electricity of hemihedral crystals with inclined faces, 1881, A., 338.
- electrical phenomena of tourmaline and hemihedral crystals with inclined faces, 1881, A., 339.
- Curie, Jacques,** and **A. Millet,** combination of chloral and acetyl chloride, 1877, i., 188.
- Curie, Paul,** new method of producing the anhydrous chlorides of aluminium and other metals, 1874, 336.
- colophthalene and colophalumina, 1875, 255.
- Curtius, Theodor,** contribution to the knowledge of polythionic acids contained in Wackenroder's solution, 1881, A., 1098.
- action of benzoic chloride on glycocine silver, 1881, A., 1144.
- Curtman, Charles Otto,** sodium cobalt nitrite as a reagent for potassium, 1882, A., 95.
- Custer, E.,** action of ethyl chlorocarbonate on mono- and di-amyamine, 1879, A., 913.
- Cyon, E. de,** physiological activity of borax, 1880, A., 415.
- Czarnomsky, von.** See **Friedrich Ludwig Alphons Oppenheim.**
- Czubata, Heinrich,** chemical changes in frozen and rotten potatoes, 1880, A., 820.
- value of acorns as fodder, 1880, A., 917.
- Czumpelitz, Ed.,** identification of alkalis, 1882, A., 310.
- D.**
- Dabney, Charles W.,** cinnabar from Oregon, 1877, i., 284.
- Daelen, Reiner,** production of steel from pig iron and iron ore, 1874, 719.
- Dahlen, H.,** siphon apparatus for filtration, 1873, 526.
- Dahlen, H. W.,** contributions to the chemical knowledge of culinary plants, 1876, ii., 648.
- Dahlen, H. W.** See also **Adolph Blankenhorn.**
- Dahl, Tellef,** norwegian, a new metal, 1879, A., 890; 1880, A., 93.
- Dal Sie, Giovanni,** on the fatty matter of *Vateria indica*, or piney tailow, 1878, A., 764.
- active principle of insect powder, 1879, A., 807.
- Dale, Richard S.,** and **Carl Schorlemmer,** aurin, 1873, 434; 1878, A., 671; 1879, T., 148; A., 58, 925.
- transformation of aurin into rosaniline, 1877, ii., 121.
- isodulcite, 1878, A., 969.
- transformation of aurin into trimethyl-*p*-rosaniline, 1879, T., 562.
- note on safranin, 1879, T., 682.
- suberic and azelaic acids, 1879, T., 684.
- suberone, 1881, T., 539.
- Dale, Richard S.** See also **Carl Schorlemmer.**
- Dalmer, Carl,** the felspar pseudomorphs of the Wilhelmsteite, near Ilmenau, 1878, A., 948.
- Dambergis, Anastasius K.** See **Sieg-mund Gabriel.**
- Damm, Gust.,** and **Ludwig Schreiner,** resorcinol dyestuffs, 1882, A., 968.
- Damm, Gust.** See also **Wilhelm Staedel.**
- Damoiseau, Albert,** action of phosphorus on hydriodic and hydrobromic acids, 1881, A., 222.
- chlorine and bromine derivatives of methane, 1881, A., 237.
- Damoiseau, O.,** a new method of substituting chlorine and bromine in organic compounds, 1876, ii., 617.
- Damour, Augustin Alexis,** on a calcareous alabaster from Mexico, 1876, ii., 386.
- hopeite, 1881, A., 366.
- note on a chromiferous garnet found on the Pic Posets, near the Maladetta (Pyrenees), 1881, A., 376.
- note on venasquite, 1881, A., 379.
- note on titaniferous peridot from Zermatt, 1881, A., 693.
- note on zinc spinelle from Brazil, 1881, A., 696.
- analysis of dumortierite, 1882, A., 151.
- note on erythroziucite, 1882, A., 281.
- artificial pseudomorphosis of calcium carbonate after gypsum, 1882, A., 282.
- Damour, Augustin Alexis,** and **Gerhard vom Rath,** kentrolite, a new mineral species from Chili, 1881, A., 554.
- Damour, Augustin Alexis.** See also **Jean Baptiste Joseph Boussingault, Alfred Louis Olivier Legrand Des C'oizeaux.**



- Dana, Edward Salisbury**, chondrodite from the Tilly Foster iron mine, Brewster, New York, 1876, i., 532.
- staurolite crystals from Fannin, Georgia, 1877, i., 582.
- a twin crystal of pyrrhotin, 1877, i., 583.
- occurrence of garnet in the trap rocks of New Haven, Connecticut, 1878, A., 386.
- Dana, Edward Salisbury**. See also *George Jarvis Brush, William Gilbert Mixer, Albrecht Schrauf*.
- Dana, James Dwight**, description of a crystal of andalusite from Delaware Co., Pennsylvania, 1873, 257.
- on the quartzite, limestone, and associated rocks of the vicinity of Great Barrington, Mass., 1873, 257.
- some points in lithology: composition of the capillary volcanic glass of Kilauea, Hawaii, called Pélé's Hair, 1880, A., 536.
- Danesi, Léobaldo**, action of potassium dichromate on acetic acid, 1880, A., 160.
- monobromopyridine, 1882, A., 867.
- Danesi, Léobaldo**. See also *Giacomo Luigi Ciamician, Angiolo Finaro, Francesco Mauro, Fiusio Sestini*.
- Dangel, St. von**. See *Hugo Weiske*.
- Dangers, F.**, a new milk tester, 1882, A., 559.
- Dangers, F.** (and others), is milk warmed by passing through the centrifugal machine? 1882, A., 1016.
- Danilewsky, Alexander I.**, on albumin, 1878, A., 989.
- crystalline decomposition product of albuminous substances, 1881, A., 185.
- constitution of albuminoids, 1882, A., 75.
- the hydration processes occurring during the formation of peptones from albumin, 1882, A., 238.
- myosin, its preparation, properties, conversion into syntonin and regeneration from the same, 1882, A., 745.
- Danilewsky, Alexander I.**, and *Paul Radenhansen*, albuminoids in milk, 1881, A., 449.
- Dannenbaum, M.** See *Adolph Claus*.
- Dannenberg, E.**, toxicological detection of colchicine, 1877, ii., 516.
- Dannfeldt, Juhlin**. See *Juhlin-Dannfeldt*.
- Darby, Stephen**, fluid meat, 1881, A., 450.
- Daremberg, Georges**. See *Emile Justin Armand Gautier*.
- Dastre, A.**, "starch granules" and "amyloids" of the egg, 1879, A., 662.
- Dastre, A.**, and *J. P. Morat*, on the nature of the bodies in the human organism which exhibit the polarisation cross, 1875, 280.
- Dathe, J. H. Ernst**, olivine rock, serpentine and eclogite of the Saxony granulite district, 1876, ii., 387, 612.
- Daubrawa, Heinrich**, trihydroxylantimonic acid, pyroantimonic acid, and oxychloride of antimony, 1877, ii., 406.
- Daubrée, Gabriel Auguste**, meteorite from Bandung, Java, 1873, 357.
- note on a meteorite which fell at Virba, near Vidin, Turkey, on the 30th of May, 1874, 1874, 1147.
- observations on the meteorite of Roda, 1875, 438.
- contemporaneous formation of minerals in the thermal waters of Bourbonne-les-Bains, 1875, 1167.
- fall of a meteorite in Russia, 1876, i., 352.
- formation of phosgenite at Bourbonne-les-Bains, 1876, i., 533.
- examples of the contemporaneous formation of iron pyrites in thermal springs and sea-water, 1876, i., 533.
- note on a hydrated aluminium silicate deposited by the hot spring of Saint Honoré (Nièvre) since the Roman age, 1876, ii., 494.
- simultaneous formation of zeolites (chabazite and christianite) under the influence of hot springs in the neighbourhood of Oran, Algeria, 1877, i., 444.
- mechanical action of incandescent gases, 1877, ii., 161.
- conclusions drawn from experiments on the action of gases produced by the explosion of dynamite, in their relation to meteorites and the circumstances attending the arrival of these bodies in our atmosphere, 1877, ii., 835.
- a meteorite belonging to the eukrite group, 1879, A., 610.
- experiments on the erosive action of strongly compressed hot gases, with reference to the history of meteorites, 1879, A., 1024.
- a meteorite which fell on January 31, 1879, at la Bécasse, Commune of Dun-le-Poëlier (Indre), 1880, A., 226.
- examination of the volcanic dust which fell at Dominica, January 4, 1880, and of the water which accompanied it, 1880, A., 453.



- Daubrée, Gabriel Auguste**, contemporaneous production of native sulphur in the subsoil of Paris, 1881, A., 227; 1882, A., 470.
- products from a crater, 1881, A., 237.
- action of mineral waters on metals, 1881, A., 238.
- examination of the material of some French "vitrified forts," 1881, A., 394.
- examination of the material of "vitrified forts" at Craig Phadrick, Inverness, and Hartmannswillerkopf, Haute Alsace, 1881, A., 703.
- on a meteorite which fell on Nov. 26, 1874, at Kerilis, Côtes du Nord, 1881, A., 1017.
- crystallized copper sulphide from ancient coins in hot springs, 1882, A., 142.
- Davenport, Russel W.**, some points in the manufacture of malleable iron, 1873, 202.
- David**, observations on urine which reduced Fehling's solution but did not affect polarised light, 1875, 1207.
- David**, and *Alph. Rommier*, estimation of carbon disulphide in the sulpho-carbonates of potassium and sodium, 1876, i., 109.
- David, H.** See *Donato Tommasi*.
- David, J.**, method of separating and determining stearic and oleic acids produced by the saponification of fats, 1878, A., 1011.
- David, R.** See *L. Léon A. Prunier*.
- Davis, J. L.**, precipitation of zinc by water, 1875, 131.
- precipitation of metals by zinc, 1875, 311.
- Davis, George E.**, a few facts concerning bleaching powder, 1873, 1169.
- composition of spent oxides from gas purifying, 1874, 609.
- analysis and valuation of spent iron oxides from gas works, 1877, ii., 927.
- estimation of nitrogen compounds in oil of vitriol, 1878, A., 605.
- composition of vitriol from denitrating and absorbing towers, 1878, A., 614.
- nitric acid in the vitriol manufacture, 1878, A., 615.
- direct method of testing vitriol exits for nitrogen compounds, 1880, A., 746.
- Davis, George E.**, and *T. H. Davis*, analysis of crude anthracene, 1875, 1057.
- Davis, George William.** See *Watson Smith*.
- Davis, Richard Hayton**, monthly analytical examination of the Harrogate Spas, 1873, 1089.
- the ancient alum well at Harrogate, 1881, T., 19.
- Davis, T. H.**, testing and valuing gas liquor, 1879, A., 79.
- Davy, Charles**, obituary notice of, 1874, 1199.
- Davy, Edmund William**, action of ammonium sulphide on chloral hydrate, 1875, 142.
- preparation of certain salts of fulminic acid, 1876, i., 702.
- on a ready means of detecting arsenical compounds, 1876, i., 754.
- a new chemical test for alcohol, 1877, i., 108.
- new test for phenol, 1878, A., 809.
- action of chlorine on the nitroprussides, 1878, A., 965.
- nitrification, 1879, A., 1046; 1880, A., 279.
- nitroprussides of the alkaloids, 1881, A., 401.
- new and expeditious method for the determination of nitrites under various circumstances, 1882, A., 1317.
- Davy, Edmund William.** See also (*Sir*) *Charles Alexander Cameron*.
- Daw, F. R. W.**, emplectite, 1880, A., 222.
- Day, Thomas Cuthbert**, experiments on germinating barley, 1880, T., 645; 1882, A., 418.
- Day, William Cathcart.** See *Harmon Northrup Morse*.
- Deacon, Henry**, obituary notice of, 1877, i., 494.
- Debray, Jules Henri**, the purple of Cassius, 1873, 601.
- note on the decomposition by heat (dissociation) of red oxide of mercury, 1873, 1098.
- the compounds of arsenic and molybdic acids, 1874, 964.
- on the dissolution of hydrated salts, 1875, 730.
- selenium in silver, 1876, ii., 380.
- the dissociation of calomel vapour, 1877, i., 47.
- a new product of the oxidation of lead and some phenomena of dissociation, 1878, A., 473.
- peculiarity of an experiment of Gay Lussac and Thenard, 1879, A., 887.
- action of acids on alloys of rhodium with lead and zinc, 1880, A., 706.

- Debray, *Jules Henri*, reactions of mercuric chloride, 1882, A., 929.
- Debray, *Jules Henri*. See also *Etienne Henri Sainte-Claire Deville*.
- Debrun, *E.*, an electro-capillary thermometer, 1880, A., 205.
- Debrunner, *H. G.*, nitrobenzene in spirituous liquors, 1878, A., 542.
- third form of carbon in steel, 1879, A., 842.
- Decaïsne, *E.*, on the insalubrity of the waters which supply Versailles, 1873, 1066.
- Decharme, *C.*, frigorific effects produced by capillarity combined with evaporation of carbon disulphide on bibulous paper, 1874, 118, 219.
- new sonorous flames, 1876, i., 35.
- Dechend, *Fritz von*, seleniobenzamide, 1875, 270.
- Dechend, *Fritz von*, and *Karl Hermann Wichelhaus*, action of aniline on nitrobenzene, 1876, i., 606.
- Deering, *William Henry*, on pyrogallate of lead and on lead salts, 1873, 702.
- on some points in the examination of waters by the ammonium method, 1875, 679.
- Defresne, *Th.*, the biliary and pancreatic secretions of omnivorous animals, 1874, 594.
- ptyalin and diastase, 1880, A., 330.
- estimation of peptones, 1881, A., 947.
- Degener, *Paul*, action of fused alkalis on benzenesulphonic acid, 1878, A., 865.
- volumetric determination of phenol, 1878, A., 918.
- action of fused alkalis on aromatic sulphonic acids, 1880, A., 320.
- reducing power of grape sugar for Fehling's solution, 1882, A., 104.
- Degenhardt, *F. C.*, blue colour of retorts used in the preparation of zinc, 1876, ii., 47.
- Dehérain, *Pierre Paul*, action of atmospheric nitrogen in vegetation, 1873, 1048, 1154.
- new researches on germination, 1876, i., 96.
- assimilation of soda by plants, 1879, A., 666.
- report on the experimental plots at Grignon, 1881, A., 932; 1882, A., 1314.
- phosphoric acid in the soil, 1882, A., 86.
- Dehérain, *Pierre Paul*, and *Emile Bréal*, changes accompanying the ripening of certain plants, 1882, A., 80, 419.
- Dehérain, *Pierre Paul*, and *Kayser*, the form of combination in which phosphoric acid exists in the soil, 1881, A., 934.
- Dehérain, *Pierre Paul*, and *Edouard Landrin*, germination, 1874, 1000.
- Dehérain, *Pierre Paul*, and *Léon Maquenne*, combination of hydrogen and oxygen by electric discharge, 1882, A., 360.
- decomposition of water by the silent discharge in presence of nitrogen, 1882, A., 459.
- vegetation in an atmosphere rich in carbonic anhydride, 1882, A., 639.
- Dehérain, *Pierre Paul*, and *Arthur Meyer*, worthlessness of phosphates as manure for certain soils, 1881, A., 61.
- development of oats, 1882, A., 418.
- Dehérain, *Pierre Paul*, and *Henri Moissan*, absorption of oxygen and emission of carbonic acid by leaves kept in darkness, 1874, 909.
- Dehérain, *Pierre Paul*, and *A. Nantier*, development of oats, 1880, A., 336.
- Dehérain, *Pierre Paul*, and *Julien Vesque*, absorption and emission of gas by the roots of plants, 1877, ii., 350.
- Dehérain, *Pierre Paul* (and others), cultivation of potatoes, maize, oats, and sainfoin, 1881, A., 455.
- Dehérain, *Pierre Paul*. See also *Edmond Fremy*.
- Dehmel, *Boleslav*, occurrence of a reducing substance in the urine of herbivorous animals, 1880, A., 332.
- estimation of albuminoids in vegetable substances, 1880, A., 352.
- Dehmel, *Boleslav*. See also *Carl Otakar Čech*, *Hugo Weiske*.
- Dehn, *Aug.*, on the excretion of potash salts, 1876, ii., 535.
- Dehne, *M.* See *Adolph Claus*.
- Dehnst, *Jul.* See *Carl Theodor Liebermann*.
- Deichmann, composition and use of peat, 1882, A., 769.
- Deichmüller, *A.*, diabetic urine, 1881, A., 1162.
- Deininger, *J.*, new plant for fodder, 1880, A., 183.
- Deiss, improvements in the stearic acid manufacture. 1874, 1119.

- Deite, C.**, iodine industry in France, 1879, A., 283.  
 — testing lubricating oils, 1879, A., 292.  
 — ghea or shea butter, 1879, A., 568.
- De la Bastie, Alfred**, resistance of toughened glass to flexure, 1881, A., 478.
- Delachanal, Bénédicte**, the hot spring at Bagnoles de l'Orne, and the deposits formed in the conduits, 1881, A., 81.
- Delachanal, Bénédicte**, and **Achille Ernest Mermet**, spectro-electric tube for observing the spectra of metallic solutions, 1874, 1125.  
 — — intestinal concretion containing lithium, 1875, 96.  
 — — on a nitrogen oxide and carbon sulphide lamp, and its application to photography, 1875, 294.  
 — — on a compound of platinum, tin, and oxygen, analogous to purple of Cassius, 1876, i., 48.  
 — — estimation of carbon disulphide in commercial alkaline sulphocarbonates, 1876, i., 108.  
 — — new electro-spectrum tube, 1876, ii., 35.
- Delachanal, Bénédicte**. See also *Camille Vincent*.
- Delafontaine, Mare**, terbium and its compounds, and the probable existence of a new metal in the samarskite of N. Carolina, 1879, A., 114.  
 — phillipium, 1879, A., 116.  
 — the mosandrium of J. L. Smith, 1879, A., 117.  
 — decipium, a new metal from samarskite, 1879, A., 117.  
 — the probable compound nature of the didymium from cerite, 1879, A., 119.  
 — the new metals of gadolinite and samarskite, 1880, A., 611.  
 — decipium and samarium, 1881, A., 979.
- De la Harpe, Ch.**, and **Willem Arne van Dorp**, action of heated lead oxide on fluorene, 1876, i., 242.
- De la Loyère, and Achille Müntz**, preparation of sulphuretted oils having insecticide properties, 1878, A., 825.
- De la Motte, H.**, action of phosphorus pentachloride and hydriodic acid on saccharic acid, 1880, A., 36.
- Delarue, E.**, preparation of dextrin from starch, 1882, A., 1146.
- De la Rue, Paul Bienvenu**, obituary notice of, 1877, i., 496.
- De la Rue, Warren, and Heinrich Wilhelm Hugo Müller**, chloride of silver battery of 3240 elements and its discharge, 1876, i., 334; 1880, A., 203; 1882, A., 253.
- De la Tour du Breuil**, new method of extracting sulphur, 1882, A., 115.
- Delattre, Ch.**, decomposition of bicalcium phosphate, 1881, A., 683.
- Delbrück, Max**, rye as a material for yeast, 1880, A., 777.  
 — souring of yeast, 1881, A., 951.
- Delbrück, Max**, and **Gustav Heinzelmann**, new method of fermentation, 1881, A., 126.
- Delbrück, Max** (and others), surface fermentation of potato mash; souring of yeast, 1880, A., 518.  
 — — chemical changes in nitrogenous substances during fermentation, 1880, A., 728.
- Del Castillo, Ant.**, a new mineral species containing bismuth, 1874, 877.
- Delesse, Achille Ernest Osear Joseph**, the deposits of calcium phosphate in Estremadura, 1878, A., 476.  
 — explosion in a coal mine due to carbonic anhydride, 1880, A., 220.  
 — removal of earthy matters from poor lead ores by means of an air blast, 1881, A., 767.
- Delffs, H.**, behaviour of sulphuretted hydrogen with salts of the heavy metals, 1880, A., 746.
- Delitsch, Gottfried**, new synthesis of guanidine, 1874, 576.  
 — action of chlorocarbonic ether on ammonium sulphocyanate, 1875, 358.
- Delpech**, Hillairet's method of preparing the fur of rabbits and hares for the manufacture of felt without the use of mercury, 1874, 99.
- Del Torre, Giacomo**. See *Fausto Sestini*.
- Delvaux, Georges** separation of nickel and cobalt, 1881, A., 1082.
- Demant, Bernhard**, extractives from muscle, 1880, A., 726.  
 — serum-albumin in muscle, 1881, A., 630.
- Demareay, Eugène Anatole**, combinations of titanium chlorides with ethers, 1873, 1015.  
 — essential oil of Roman chamomile, 1873, 1226.  
 — titanic ethers, 1875, 441.  
 — the dibromide of angelic acid, 1876, ii., 70.  
 — oxypyrotartaric acid, a derivative of ethyl acetoacetate, 1876, ii., 403.  
 — derivatives of acetylvaleric acid, 1876, ii., 506.  
 — on some monochlorinated acids of the acrylic acid series, 1877, ii., 590.

- Demarcay, Eugène Anatole**, simple method of preparing certain mono-, di-, and tri-chlorinated acids, 1877, ii., 590.
- some derivatives of acetylacetic ether, 1877, ii., 594.
- derivatives of ethylic isobutylacetylacetate, 1878, A., 660.
- ethylic isobutylacetylacetate, 1878, A., 661.
- tetric acid and its homologues, 1879, A., 457.
- homologues of oxyheptic acid, 1879, A., 458.
- relations of tetric and oxytetric acids and their homologues with succinyl, malyll, and other radicles of the bibasic acids, 1879, A., 459.
- preparation of acetonitrile, 1880, A., 618.
- tetrolic and oxytetrolic acids and their homologues, 1880, A., 625; 1881, A., 255.
- new derivative of nitrogen sulphide, 1881, A., 222.
- action of chlorine on nitrogen sulphide, 1881, A., 346.
- some compounds of sulphur and nitrogen, 1881, A., 976.
- volatilisation of metals in a vacuum, 1882, A., 1264.
- Demarcay, Eugène Anatole**. See also *Auguste André Thomas Cahours*.
- Demel, Wladimir**, amidonitrosulphide of iron, 1879, A., 597.
- zinc and cadmium arsenates, 1879, A., 884; 1880, A., 217.
- zinc phosphates, 1879, A., 1016.
- Roussin's salt, 1880, A., 218.
- difficultly combustible substance, 1882, A., 998.
- Demole, Eugène**, oxethenaniline, 1874, 77.
- quick method of preparing glycol, 1874, 783.
- oxethenetoluidine, 1874, 903.
- nitrobutane and its constitution, 1874, 984.
- molecular changes in the aromatic group, 1875, 253.
- on the preparation of glycol, 1875, 343; 1876, ii., 284.
- primary isonitrobutane, 1875, 561.
- action of ethylene bromide on dilute alcohol in presence of ethylene acetate, 1875, 747, 1172.
- substitution derivatives of ethylene oxide, 1876, i., 692.
- action of bromine on ethene chloride, 1876, ii., 283.
- Demole, Eugène**, on a supposed case of molecular transformation in the fatty series, 1876, ii., 396.
- formation of ethers at low temperatures by means of hydrochloric acid, 1878, A., 20.
- notes on tartronic acid, 1878, A., 34.
- formation of acid bromides by the addition of oxygen to brominated olefines, 1878, A., 401.
- experiments and theory on the change of  $\text{CHBr}=\text{CHBr}$  by means of oxygen into  $\text{CH}_2\text{Br.COBr}$ , 1878, A., 847.
- formation of a ketone containing four carbon atoms from dibromethylene, 1879, A., 220.
- partial synthesis of milk sugar and a contribution to the synthesis of cane sugar, 1880, A., 29.
- constitution of dibromethylene, 1880, A., 158.
- action of oxygen on the bromo-derivatives of unsaturated hydrocarbons, 1881, A., 142.
- Demole, Eugène**, and **Henri Dürr**, oxidation of unsaturated chloro-, bromo-, and chlorobromo-substituted hydrocarbons, 1878, A., 846.
- Demole, Eugène**. See also *Albert Ladenburg*.
- Dennstedt, Maximiliano**, benzyl *o*-thioformate, 1879, A., 318.
- derivatives of *p*-bromaniline, 1880, A., 633.
- crystalline form of benzyl *o*-thioformate, 1880, A., 646.
- Dennstedt, Maximiliano**. See also *Giacomo Luigi Ciamician*.
- Denucé, D.**, preservation of wine by means of salicylic acid, 1882, A., 1014.
- Denzel, Julius**, nomenclature and boiling points of the chlorobromo-substitution products of ethane and ethylene, 1879, A., 368.
- halogen derivatives of ethane and ethylene, 1880, A., 228.
- Déon, Horsin**. See *Horsin-Déon*.
- Dépierre, Jos.**, a means of protecting alizarin from the action of iron, 1876, ii., 234.
- coloured printing on cottons dyed with indigo, 1878, A., 455.
- Dépierre, Jos.**, and **W. Tatarinoff**, use of chromium chlorate in cotton printing, 1878, A., 824.
- Derome, P.**, separation of phosphoric acid from iron and alumina, 1880, A., 286.



- Dervaux-Ibled**, method of selecting beet for seeding, 1880, A., 134.
- Desains, Paul**, refraction of invisible heat, 1879, A., 864.
- Desains, Paul**, and **J. Aymonnet**, cold bands in dark spectra, 1876, i., 27.
- Desbarres, L.**, passage of nutritive material in plants, 1880, A., 493.
- Descamps, Armand**, metallic arsenides, 1878, A., 705.
- potassium cobaltocyanide, 1879, A., 303.
- double cyanides of metals of the iron group, 1882, A., 151.
- Des Cloizeaux, Alfred Louis Olivier Legrand**, crystalline form and optical properties of amblygonite and montebrasite, 1873, 481.
- pyroxenic element of the rock associated with platinum from the Ural, 1875, 623.
- on the constitution of triclinic feldspars, 1875, 741.
- crystalline form and optical properties of durangite, 1875, 869.
- microlene, a new species of triclinic feldspar, 1876, ii., 180.
- microscopical examination of orthoclase and of sundry triclinic feldspars, 1876, ii., 611.
- a new anorthophyllite from Bamle in Norway, 1877, ii., 851.
- crystalline form and optical properties of mercurous iodide, 1878, A., 474.
- crystalline form of magnesium, 1880, A., 611.
- hopeite, 1881, A., 366.
- on the monoclinic form to which epistilbite should be referred, 1881, A., 397.
- danburite from Danbury, 1882, A., 151.
- note on the optical properties of erythrozoineite, raimondite and copiapite, 1882, A., 281.
- Des Cloizeaux, Alfred Louis Olivier Legrand**, and **Augustin Alexis Damour**, homilite, 1879, A., 32.
- chalcocite, a new mineral, 1881, A., 691.
- note on cabrerite from Laurium, 1881, A., 691.
- Deshayes, Victor**, estimation of manganese in iron, steel, &c., 1878, A., 808.
- Desor, F.**, action of lime on solutions of sugar, 1880, A., 834.
- Dessaignes, Victor**, obituary notice of, 1882, T., 236.
- Destrem, Jean Alphonse**, action of benzoyl chloride on leucin, 1878, A., 506.
- cholic acid, 1879, A., 333.
- compounds of metallic salts with compound ammonias, 1879, A., 376.
- compounds of alcohols with baryta and lime and the products of their decomposition, 1880, A., 711.
- Destrem, Jean Alphonse**. See also **Aristide Frébault**, **Paul Schützenberger**.
- Desvignes, Frederick Charles**, obituary notice of, 1877, i., 495.
- Detmer, Wilhelm**, passage of plant material in seedlings, 1880, A., 335.
- formation of starch in plants, 1882, A., 640.
- influence of certain substances on plant cells and ferments, 1882, A., 881.
- Detsényi, Gust.**, manufacture of chloral hydrate, 1874, 572.
- Deutecom, Bernhard**, estimation of sulphur in pyrites, 1880, A., 744.
- Deutsch, Alfred**, ethereal salts of tribasic formic acid, 1879, A., 453.
- Deutsch, Alfred**. See also **Siegismund Gabriel**.
- Deutschmann, R.**, contribution to the knowledge of blood fibrin, 1876, i., 944.
- Déville, Sainte-Claire**. See **Sainte-Claire Deville**.
- Dewalque, François**, the glauconite of Antwerp, 1875, 871.
- diadochite from the Védriu mine, 1881, A., 999.
- Dewar, James**, the chemical efficiency of sunlight, 1873, 24.
- cystine, 1873, 74.
- the specific heat of carbon at high temperatures, 1873, 239.
- on the physical constants of hydrogenium, 1874, 866.
- studies on the quinoline series, transformation of leucoline into aniline, 1877, ii., 499.
- formation of hydrocyanic acid in the electric arc, 1880, A., 23.
- critical point of mixed vapours, 1880, A., 842; 1882, A., 268.
- lowering of the freezing point of water by pressure, 1880, A., 845; 1882, A., 270.
- studies on the electric arc, 1881, A., 962; 1882, A., 259.
- notes on electrolytic experiments, 1881, A., 962.
- studies on the quinoline series, 1881, A., 1043.



- Dewar, James**, and **William Dittmar**, the vapour density of potassium, 1873, 726.
- Dewar, James**. See also *George Downing Liveing*, *John Gray McKendrick*.
- Dewey, Fred. P.**, Clarke's method for the separation of tin from arsenic and antimony, 1880, A., 289.
- Diakonoff, D. I.**, conversion of acid chlorides into alcohols, 1877, i., 58.
- specific and latent heats of evaporation of three saturated alcohols, 1882, A., 355.
- Dianin, Alexander P.**, action of ferric chloride on the isomeric naphthols, 1874, 262.
- oxidation of  $\alpha$ -naphthol, 1874, 802.
- conversion of phenols into diphenols by oxidation, 1882, A., 623.
- Dibbitts, Hendrik Cornelis**, dissociation of ammonium salts in aqueous solution, 1873, 33; 1875, 608; 1876, i., 680.
- dissociation of acetates in solution, 1873, 33.
- solubility of lead sulphate in a solution of sodium acetate, 1874, 662.
- solubility and dissociation of the acid carbonates of potassium, sodium, and ammonium, 1875, 421.
- saturation of air with water-vapour and on the drying of the same, 1876, ii., 379.
- on the decomposition of some ammonium salts by potassium and sodium salts, 1877, i., 490.
- Didelot, Léon**. See *Paul Cazeneuve*.
- Dieck, Erich**, and **Bernhard Tollens**, carbohydrates from the tubers of the Jerusalem artichoke, 1879, A., 778; 1880, A., 619.
- Dieckmann, A.** See *Paul Ehrhardt Jannasch*.
- Diehl, Theodor**, halogen derivatives of alizarin, 1878, A., 428.
- chlorine and bromine derivatives of anthracene and anthraquinone, 1878, A., 429.
- Diehl, Theodor**, and **Victor Merz**, derivatives of  $\alpha$ -naphthaquinone, 1878, A., 322, 888.
- dibromonaphthaquinone and bromoxynaphthaquinone, 1878, A., 736.
- on oxyquinones and resorcin derivatives, 1878, A., 875.
- naphthopieric acid and some of its derivatives, 1879, A., 250.
- Diehl, W.**, volumetric estimation of lead, 1880, A., 752.
- Diernfellner, C.** See *Adolph Claus*.
- Dieterich, Eugen**, quick method of preparing straw pulp, 1876, i., 136.
- specific gravity of wax, ceresin, etc., 1882, A., 1139.
- Dietl, Michael J.** See *Maximilian (Ritter) von Vintschgau*.
- Dietlen, Friedr.**, method of finishing bronze and brass articles, 1876, ii., 227.
- Dietrich, G.** See *B. Aronheim*.
- Dietzell, B. E.**, evolution of free nitrogen during putrefaction, 1882, A., 991, 1122.
- Dietzell, B. E.**, and **M. G. Kressner**, testing butter, 1879, A., 407.
- estimation of phosphoric acid in fish guano, 1879, A., 968.
- Dieulaufait, Louis**, diffusion of strontium in nature at the present time and at the various geological epochs: consequences relative to mineral waters, 1877, ii., 577.
- boric acid, 1878, A., 11.
- presence of ammoniacal salts in sea-water, 1879, A., 9.
- the existence of barium and strontium in all rocks constituting the primary formation, 1879, A., 444.
- distribution of copper in primordial rocks and in the sedimentary deposits derived from them, 1879, A., 1020.
- occurrence of lithium in rocks, sea-water, mineral waters, and saline deposits. 1880, A., 17.
- normal presence of copper in the plants which grow on primordial rocks, 1880, A., 494.
- existence of zinc in all primary rocks and in sea-waters of all ages, 1880, A., 708.
- law of the formation of saline mineral waters, 1881, A., 1018.
- existence of boric acid in saline lakes and natural saline waters, 1881, A., 1019.
- presence of titanium and vanadium in all the primitive rocks, 1882, A., 371.
- existence of lithium and of boric acid in the Dead Sea, 1882, A., 1037.
- Diez, Th.**, preparation of pure hydrochloric acid, 1873, 132.
- Dill, H.**, acorns and earthpuffs as distilling materials, 1882, A., 121.
- Dingstedt, E. von**, olivine from Vesuvius, 1874, 553.
- Direks, V.**, analyses of Norwegian hay, 1880, A., 916.
- testing oil cakes for myronic acid, 1882, A., 1236.

- Dirvell, Ph.**, new method of separating nickel from cobalt, 1880, A., 287.
- Disqué, L.**, mobilin, 1879, A., 170.
- Ditte, Alfred**, preparation of crystalline borates in the dry way, 1874, 127.
- researches on the decomposition of certain salts by water, 1875, 232, 332.
- on the solubility of sodium nitrate and on its combination with water, 1875, 734.
- estimation of boric acid in presence of silicon and fluorine, 1875, 1288.
- estimation of boric acid, 1876, i., 107.
- action of hydrogen chloride and hydrogen bromide on selenious anhydride, 1876, ii., 476.
- action of halogen acids on tellurous oxide, 1876, ii., 606; 1877, i., 45.
- action of halogen acids on selenious oxide, 1877, i., 45.
- action of calcium sulphate on the sulphates of the alkalis, 1877, i., 440.
- observations on Yvon's paper on the nitrates of bismuth, 1877, ii., 572.
- on some properties of cadmium sulphide, 1877, ii., 843.
- separation of iron, chromium, and uranium, 1877, ii., 926.
- some properties of boric acid, 1878, A., 194.
- action of haloid acids on mercuric sulphate and of sulphuric acid on the haloid salts of mercury, 1879, A., 299.
- researches on the decomposition of metallic salts and on certain inverse reactions which take place in presence of water, 1879, A., 1006.
- action of the haloid acids on the sulphates of mercury, 1880, A., 12.
- action of metallic nitrates on nitric acid, 1880, A., 153, 154.
- freezing mixtures of an acid and a hydrated salt, 1880, A., 602.
- refrigerating mixtures with two crystallised salts, 1880, A., 784.
- combinations of uranium oxyfluorine compounds with fluorides of the alkali metals, 1880, A., 794.
- fluorine compounds of uranium, 1880, A., 853.
- decomposition of salts by liquids, 1881, A., 17.
- action of hydrochloric acid on metallic chlorides, 1881, A., 223, 347, 785.
- compounds of hydrochloric acid with mercuric chloride, 1881, A., 355.
- Ditte, Alfred**, action of chlorine and hydrochloric acid on lead chloride, 1881, A., 788.
- action of lead peroxide on alkaline iodides, 1881, A., 976.
- solubility of silver in presence of iodides, 1881, A., 1101.
- iodine compounds of lead, 1882, A., 142.
- combination of lead iodide with alkaline iodides, 1882, A., 466.
- action of litharge on the iodides of the alkali metals, 1882, A., 695.
- decomposition of lead salts by alkalis, 1882, A., 805.
- some reactions of stannous salts, 1882, A., 808.
- action of potash on lead oxide, 1882, A., 927.
- action of acid solutions on stannous oxide, 1882, A., 1029.
- action of alkaline solutions on stannous oxide, 1882, A., 1030.
- action of alkaline sulphides on stannous sulphides, 1882, A., 1030.
- Dittler, August**. See *Carl Theodor Liebermann*.
- Dittler, Fritz**. See *Carl Arnold August Michaelis*.
- Dittmar, William**, specific gravity of legumin and glutin, 1873, 283.
- determination of the amount of chromium in chrome ores, 1877, i., 108.
- note on Reboul's *n*-pyrotartaric acid, 1877, i., 188.
- proximate composition of coal gas, 1877, i., 230.
- differential method of specific gravity determination, 1881, A., 938.
- Dittmar, William**, and **Henry Robinson**, determination of the organic matter in potable waters, 1877, ii., 806.
- Dittmar, William**. See also *James Dewar*.
- Dittrich, Eugen**, methyltaurine, methyltaurocyamine, and taurocyamine, 1879, A., 225.
- Ditzel**. See *H. P. Örum*.
- Divers, Edward**, on the union of ammonia nitrate with ammonia, 1873, 598.
- sodium alum of Japan, 1882, A., 20.
- chrome iron ore of Japan, 1882, A., 21.
- occurrence of selenium and tellurium in Japan, 1882, A., 362.
- two Japanese meteorites, 1882, A., 814.

- Divis, Jan V.**, estimation of caustic lime in bone char, 1874, 709.
- preparation of sal-ammoniac from the gas liquor of bone works, 1874, 727.
- preparation of pressed yeast, 1874, 1027.
- Dixon, W. A.**, metallurgy of nickel and cobalt, 1879, A., 285.
- extraction of gold, silver, and other metals from pyrites, 1879, A., 288.
- inorganic constituents of the coals of New South Wales, 1881, A., 983.
- on salt-bush and native fodder plants of New South Wales, 1881, A., 1067.
- Doassans, E.**, thalictrine, 1881, A., 52.
- Doassans, E.**, and **Maurice Hanriot**, a substance from *Thalictrum macrocarpum*, 1881, A., 52.
- Dobbie, James Johnstone.** See **William Ramsay**.
- Dobbin, Leonard**, on some reactions of tertiary butyl iodide, 1880, T., 236.
- Dobbin, Leonard.** See also **Edward Frankland**.
- Dobrosławin, Alexis**, differences in the diastatic reactions of starch from different sources, 1877, i., 453.
- Dochmann, Alexander**, peptonization of albuminoids in koumiss, 1882, A., 1221.
- Doebner, Oscar Gustav**, derivatives of diphenyl, 1874, 892.
- oxidation of ditolyl, 1876, i., 914.
- constitution of diphenyldisulphonic acid, 1876, i., 932.
- synthesis of oxyketones, 1878, A., 424.
- formation of dyes by the action of benzotrichloride on phenols and tertiary aromatic bases, 1878, A., 873; 1880, A., 239, 644; 1881, A., 165; 1882, A., 956.
- malachite-green, 1879, A., 312.
- homologous tertiary diamines obtained in the methylaniline manufacture, 1879, A., 786.
- aromatic amidoketones, 1880, A., 804.
- formation of aromatic ketonic acids, 1881, A., 600.
- researches on benzoyl compounds, 1882, A., 507.
- Doebner, Oscar Gustav**, and **Wilhelm von Miller**, a homologue of quinoline, 1882, A., 863.
- Doebner, Oscar Gustav**, and **Wilhelm Stackmann**, action of benzotrichloride on phenol, 1877, ii., 327.
- Doebner, Oscar Gustav**, and **Wilhelm Stackmann**, benzoylphenol, 1878, A., 321.
- synthesis of oxyketones by introducing acid radicles into phenols, 1879, A., 319.
- Doebner, Oscar Gustav**, and **Georg Weiss**, benzoylaniline, 1882, A., 176.
- Doebner, Oscar Gustav**, and **Walther Wolff**, synthesis of oxyketones, 1879, A., 638.
- Doebner, Oscar Gustav.** See also **John Murdock**.
- Doelter, Cornelius**, contributions to the mineralogy of the Fassathal and the Fleimserthal, 1876, i., 887; 1878, A., 390.
- the mineralogical composition of the melaphyr and augitic porphyry of South Tyrol, 1877, i., 534.
- tridymite from the Hargittastock Siebenbürgen, 1877, ii., 720.
- the eruptive formation of Fleims, with some remarks on formations of the older volcanoes, 1878, A., 480.
- diopside, 1879, A., 442.
- estimation of ferrous oxide in silicates, 1879, A., 484.
- aemite and aegyrine, 1881, A., 26.
- new resin from Köllach in Styria, 1881, A., 359.
- constitution of the pyroxene group, 1881, A., 371.
- chemical composition of arfvedsonite and some allied minerals, 1881, A., 552.
- spodumene and petalite, 1881, A., 694.
- occurrence of prophyllite in Transylvania, 1881, A., 698.
- products of the volcano Monte Ferru, Sardinia, 1881, A., 700.
- mechanical separation of minerals, 1882, A., 656, 1173.
- Doer, William H.**, some derivatives of diphenylmethane, 1873, 170.
- azonaphthalene, 1877, ii., 623.
- Döring.** See **Bechmann**.
- Dogiel, Johann M.**, ozone and its action on the blood, 1876, ii., 105.
- reactions of albumin, and behaviour of the albumin of the refracting media of the eye, 1879, A., 834.
- chemical theory of the physiological action of arsenic, 1882, A., 987.
- Dollfus, Ernst**, manufacture of sodium acetate and of pure acetic acid from pyroligneous acid, 1876, i., 989.
- recovery of aldehyde in the manufacture of sugar of lead, 1876, ii., 228.

- Dollfus, Eugen, and Friedrich Goppels-roeder**, practical and theoretical study of green, blue, and violet ultramarine, 1876, ii., 554.
- Domac, Julius**, hexylene from mannitol, 1881, A., 1113.
- action of chlorine dioxide on hexylene, 1882, A., 1039.
- Domalip, Karl**, the mechanical theory of electrolysis, 1874, 645.
- Domeyko, Ignacio**, on the lateral solfataras of the Chili volcanoes and on some new minerals, 1874, 455.
- telluric minerals recently discovered in Chili, 1876, i., 349.
- meteorites discovered in South America, 1876, i., 353.
- daubreite (*bismuth oxychloride*), a new mineral, 1876, ii., 180.
- minerals from Chili, 1876, ii., 492; 1882, A., 471.
- phosphates and borophosphates of magnesia and lime in the guano deposit of Mejillones, 1880, A., 446.
- crystals of metallic copper from the mines of Coro-Coro, Bolivia, 1881, A., 997.
- bismuth ores of Bolivia, Peru, and Chili, 1881, A., 998.
- Donald, George**. See *Edmund James Mills*.
- Donaldson, Henry Herbert**. See *Russell H. Chittenden*.
- Donath, Eduard**, the testing of beeswax for adulterations, 1873, 194.
- examination of juniper berries, 1873, 1051.
- estimation of paraffin in stearin candles, 1873, 1058.
- the inverting constituent of yeast, 1875, 1206.
- remarks on Barth's "research on invertin," 1878, A., 802.
- applications of glycerin in analysis, 1879, A., 178.
- detection of chromates and of free chromic acid, 1879, A., 401.
- method for the detection and estimation of iodine in presence of chlorine and bromine, 1880, A., 285.
- estimation of cobalt and nickel, 1880, A., 287.
- decomposition of arsenic and antimony compounds, 1880, A., 348.
- chemical technological notes, 1880, A., 516.
- contributions to the metallurgy and docimacy of nickel, 1880, A., 770.
- direct estimation of alumina in presence of iron, 1881, A., 760.
- Donath, Eduard**, volumetric determination of chromium and manganese in presence of ferric oxide and alumina, 1881, A., 760.
- separation of silver from lead, 1881, A., 760.
- occurrence of arsenic and vanadium in commercial caustic soda, 1881, A., 856.
- Donath, Eduard, and Joseph Mayrhofer**, detection of nickel and cobalt, 1882, A., 555.
- detection of glycerol, 1882, A., 557.
- Donath, Julius**, on the substances concerned in the acid reaction of urine, 1874, 812.
- action of alkaline copper solution on hydroxylamine, 1877, ii., 406.
- specific heat of uranosouranic oxide and the atomic weight of uranium, 1879, A., 688.
- preparation of barium from barium amalgam, 1879, A., 691.
- physiological effects and chemical reaction of quinoline, 1881, A., 298; 1882, A., 211.
- Donath, Julius**. See also *Richard L. Maly*.
- Donkin, William Frederick**, direct synthesis of ammonia, 1873, 1002.
- amount of exhaustion obtainable by Sprengel's mercurial pump, 1874, 537.
- Doremus, Charles A.**, Wilkinson's process of making gas from wood, 1881, A., 769, 954.
- Dora, E.**, electrical currents produced by the flow of liquids through tubes, 1879, A., 346.
- Dorp, Willem Arno van**, new synthesis of anthracene, 1873, 500.
- synthesis of anthracene and of dimethylantracene, 1874, 63.
- Dorp, Willem Arno van**. See also *Arno Behr, Ch. De la Harpe, Sebastiaan Hoogewerff*.
- Dott, David Brown**, Davy's test for the purity of chloroform, 1877, i., 346.
- meconic acid, 1881, A., 418.
- transformation of morphine into codeine, 1882, A., 981.
- Dotto-Scribani, Francesco**, detection of nitric acid in commercial lemon juice, 1878, A., 914.
- economical process for preparing bibasic quinine citrate, 1880, A., 126.
- Douglas, John C.**, the phenomenon commonly called the "cry of tin," 1881, A., 783.



- Douglas, Thomas**, use for a constituent of gas lime, 1878, A., 624.  
 — green pigment from barium chromate, 1879, A., 987.
- Douliot, Emile**, action of incandescent bodies on the transmission of electricity, 1874, 333.  
 — action of flames on electrified bodies, 1876, i., 510.
- Downes, Arthur**, a simple process of slow actinometry, 1881, A., 485.
- Dowson, Edward**, obituary notice of, 1880, T., 258.
- Dowson, Joseph Emerson**, apparatus for making a cheap gas for gas motors, 1882, A., 430.
- Dragendorff, Johann Georg Noël**, the presence of bile acids in normal urine, 1873, 928.  
 — adulteration of essential oils with turpentine, and its detection by means of alcohol, 1873, 1058.  
 — examination of beer for foreign bitter principles, 1874, 818; 1882, A., 103.  
 — on ergot of rye, 1876, ii, 531; 1878, A., 518.  
 — comparative analyses of rhubarb, 1878, A., 624.  
 — theobromine, 1878, A., 903.  
 — analysis of the bulbs of *Erythronium Dens-canis*, 1878, A., 904.  
 — mannitol as a bye product in the formation of lactic acid, 1880, A., 100.  
 — formation of resin and chemistry of ethereal oils, 1880, A., 125.  
 — detection of blood stains, 1882, A., 561.  
 — analysis of the leaves of *Memecylon tinctorium*, 1882, A., 1124.
- Dragendorff, Johann Georg Noël**, and **Nils Ludwig Stahre**, chemistry of the *Pæonia peregrina*, 1879, A., 1043.
- Dragounis, E. J.**, a new method of determining temperatures, 1878, A., 3.
- Draper, Harry Napier**, solubility of ether in aqueous hydrochloric acid, 1877, ii., 178.
- Draper, Henry**, existence of oxygen in the sun and a new theory of the solar spectrum, 1878, A., 101.
- Draper, John Christopher**, the heat produced in the body and the effects of exposure to cold, 1873, 287.  
 — effect of temperature on the power of solutions of quinine to rotate polarized light: suggestions regarding the preparation to be used when quinine is employed as a medicine, 1877, i., 322.
- Draper, John Christopher**, presence of dark lines in the solar spectrum which correspond closely with the oxygen lines, 1879, A., 997.  
 — dark lines in the solar spectrum on the less refrangible side of G, 1880, A., 201.
- Draper, John William**, researches in actino-chemistry; distribution of chemical force in the spectrum, 1873, 232.
- Drasche, Richard von**, on serpentine, 1873, 1010.  
 — pseudomorphous formations after felspar, 1874, 548.  
 — the meteorite of Lancé, 1876, i., 55.
- Drechsel, Edmund**, cyanamide, 1874, 366; 1875, 1184; 1880, A., 307.  
 — a new method of obtaining trimethylphosphine, 1875, 359.  
 — the oxidation of glycocine, leucine, and tyrosine, and the occurrence of carbamic acid in blood, 1876, i., 701.  
 — on the behaviour of cyanamide, dicyanodiamide, and melamine under the action of heat, 1876, ii., 289.  
 — two new modes of formation of cyanamide, 1878, A., 39.  
 — some new carbamates, 1878, A., 44.  
 — preparation of crystalline albumin compounds, 1879, A., 950.  
 — carbamido-palladium chloride, 1880, A., 161.  
 — galvanic experiments (platinum bases), 1880, A., 300.  
 — formation of hypoxanthine from albuminoids, 1880, A., 672.  
 — formation of urea in the animal organism, 1881, A., 192.  
 — mercurous chloride, 1882, A., 18.  
 — crystalline guanine, 1882, A., 27.  
 — a modification of Pettenkofer's reaction for gallic acid, 1882, A., 108.
- Drechsel, Edmund**, and **Hermann Möller**, carbocomenic acid, and the ether of carbogallic acid, 1878, A., 784.
- Drechsel, Edmund**. See also **Carl Johann August Theodor Scheerer**.
- Drechsler, Edmund**, analysis of gabbro from Prato in Tuscany. 1873, 856.
- Drechsler, Gustav**, potato cultivation, 1879, A., 823.  
 — Chili potash saltpetre, 1880, A., 507.  
 — manuring experiments at the experimental station, Göttingen, 1880, A., 922; 1882, A., 89.  
 — experiments on potatoes and sugar beet with potassium sodium nitrate, 1882, A., 771.



- Drevermann, August**, recovery of sugar from calcium saccharates, 1879, A., 492.  
 — recovery of sugar from molasses, 1879, A., 844.
- Drews, Adalbert**. See *Heinrich August Bernthsen*.
- Drewsen, S.**, estimation of soluble phosphate in superphosphates, 1881, A., 465.
- Drewsen, Viggo Brøtner**, derivatives of *p*-nitrocinnamic acid, 1882, A., 846.  
 — *p*-cresolphthalein anhydride, 1882, A., 1098.
- Dreyfus, Edmond**, estimation of chlorate in hypochlorites, 1882, A., 94.
- Droeze, J. Haver**, solubility of gypsum in water and in saline solutions, 1877, ii., 112.
- Drouin, Alexis**. See *Joseph de Baxeres de Torres*.
- Drown, Thomas M.**, determination of sulphur in iron and steel, 1874, 918.  
 — incidental results of Danks's puddling furnace, 1874, 1025.  
 — determination of silicon in pig iron and steel, 1879, A., 974.  
 — determination of sulphur in sulphides and in coal and coke, 1881, A., 645.  
 — reduction of iron ore by powdered zinc, 1881, A., 1170.  
 — the condition of sulphur in coal and its relation to coking, 1882, A., 780.
- Drown, Thomas M.**, and *Porter W. Shimer*, estimation of silicon and titanium in pig iron and steel, 1881, A., 647.  
 — analysis of iron ores containing both phosphoric and titanio acid, 1882, A., 777.
- Drueding, Charles C.**, analysis of cotton root bark, 1877, ii., 915.
- Drygin, A.**, a new quinine salt, 1879, A., 169.  
 — cinchonichine, a new quinine alkaloid, 1879, A., 169.  
 — double salt of quinine hydrochloride and urea, 1882, A., 74.
- Dubelir, Dimitri P.**, influence of the continued use of sodium carbonate on the composition of the blood, 1881, A., 1161.
- Dubrunfaut**, preparation of sugar without molasses, 1882, A., 122.
- Ducla**, industrial preparation of pure salts of alumina, 1877, ii. 521.
- Duclaux, Emile**, the colouring matter of wine, 1874, 725.  
 — the volatile acids of wine, 1874, 725.
- Duclaux, Emile**, new process for estimating the alcoholic value of wines, 1874, 817.  
 — estimation of alcohols, 1874, 1012.  
 — estimation of the volatile acids in wine, 1875, 188.  
 — on the separation of mixed liquids and on some new maximum and minimum thermometers, 1876, i., 336.  
 — the separation of mixed liquids, 1877, i., 34.  
 — surface tension of aqueous solutions of alcohols and fatty acids, 1878, A., 195.  
 — tension of the vapour given off by a mixture of two liquids, 1878, A., 549.  
 — ripening and decomposition of cheese, 1879, A., 858.  
 — researches on cheese making in 1880 at the dairy station of Fan (Cantal), 1882, A., 436.  
 — gastric digestion, 1882, A., 753.  
 — pancreatic digestion, 1882, A., 1118, 1119.  
 — digestion of fatty and celluloid matters, 1882, A., 1119.
- Duclaux, Emile, G. Lechartier**, and *Jules Raulin*, chemical purification of wool, 1875, 200.
- Ducloux, X.**, note on a new mineral from the province of Lerida, 1874, 965.
- Ducoudray, L.** See *Antoine Pierre Athanase Rabuteau*.
- Ducretet, E.**, a new property of aluminium, 1876, ii., 46.
- Dudley, William L.**, spigeline, a new volatile alkaloid, 1881, A., 1153.  
 — Holland's process for melting iridium, 1882, A., 703.
- Dudley, William L.**, and *Frank Wigglesworth Clarke*, graphite from Ducktown, Tennessee, 1881, A., 989.
- Dudley, William L.** See also *Frank Wigglesworth Clarke*.
- Dudouy, Alfred**, manuring of beetroot, 1881, A., 61.
- Dudouy Alfred**. See also *Jules Godefroy*.
- Dühring, Ulrich**, the law of corresponding boiling points, 1881, A., 71.
- Dünkelberg**, and *von Voigts-Rhetz*, feeding horses with flesh-meal, 1880, A., 57.
- Dünkelberg** (and others), artificial manures, 1881, A., 304.
- Dünner, J.**, action of carbon bisulphide on *o*-amidophenol, 1876, ii., 204.
- Dürr, Henri**. See *Eugène Demole*.
- Dufet, Henri**, electric conductivity of pyrites, 1876, i., 332.

- Dufet, Henri**, variation of the indices of refraction in mixtures of isomorphous salts, 1878, A., 631; 1881, A., 2.
- Dufour, Louis**, diffusion of gases through porous walls, and the accompanying changes of temperature, 1873, 835.
- diffusion between moist and dry air through a porous diaphragm, 1874, 758.
- hygrometric diffusion, 1876, ii., 42.
- Duggan, James Reynolds**, estimation of urea by sodium hypobromite, 1882, A., 778.
- Duisberg, Carl**, ethyl acetoacetate, 1882, A., 1192.
- Dujardin-Beaumetz**, physiological action of amylammonium chloride, 1874, 174.
- Dujardin-Beaumetz and Audigé**, the toxic properties of alcohols produced by fermentation, 1876, i., 92; ii., 538.
- Dujardin-Beaumetz and Ernest Hardy**, oatmeal, its composition and value as a food stuff, 1874, 912.
- Dulk, L.**, chemistry of forests, 1875, 1279.
- Dulk, L.** See **Victor Meyer**.
- Dumas, Ernest**, composition of "touchstone," 1877, i., 445.
- Dumas, Jean Baptiste André**, action of carbon and iron on carbonic anhydride at a red heat, 1873, 37.
- alcoholic fermentation, 1873, 80.
- ferments belonging to the diastase group, 1873, 82.
- action of water on lead, 1874, 232.
- new method of taking vapour densities, suggested by Dulong, 1874, 650.
- the hydrocarbons produced by the action of acids on cast iron and steel, 1874, 971.
- composition and physiological effects of coal tar, 1875, 280.
- presence of oxygen in metallic silver, 1878, A., 377.
- gases occluded in aluminium and magnesium, 1881, A., 350.
- carbonic anhydride in the atmosphere, 1882, A., 692.
- Du Moncel, (Comte) Théodore Achille Louis**, effect of surrounding the negative electrode of a carbon battery with charcoal powder, 1873, 25.
- the condensed discharge of the induction spark, 1873, 830.
- effects produced by electric currents on mercurial electrodes immersed in various solutions, 1873, 833.
- Du Moncel, (Comte) Théodore Achille Louis**, the salts employed by Voisin and Dronier for the bichrome battery, 1873, 947.
- electric conductivity of woody bodies and other bad conductors, 1875, 121.
- electric conductivity of moderately good conductors, 1876, i., 28, 331.
- electric conductivity and polarization of minerals, 1876, i., 29.
- electric conductivity of imperfect conductors, 1876, i., 510.
- Dumreicher, Oscar (Freiherr) von**, action of stannous chloride on nitrogen compounds, 1882, A., 361.
- aluminium chloride and monobromobenzene, 1882, A., 606.
- Duncan, James, John Alexander Reina Newlands, and Benjamin Edward Reina Newlands**, improvements in the treatment of sugar, 1879, A., 421.
- — — improvements in the treatment of saccharine substances or compounds, 1879, A., 421.
- Dunin von Wasowicz.** See **Wasowicz**.
- Dunn, John Thomas**, action of ammonia on sodium phosphate, 1877, ii., 703.
- retarding action of glycerin, 1877, ii., 730.
- solubility of sulphurous acid in sulphuric acid, 1882, A., 1027.
- Dunnington, Francis P.**, new form of instrument for the determination of specific gravity, 1880, A., 743.
- microlite from Amelia Co., Virginia, 1881, A., 1002.
- columbite, orthite, and monazite from Amelia Co., Virginia, 1882, A., 1175.
- Dupertuis, Ch.** See **Wilhelm Michler**.
- Duppa, Baldwin Francis**, obituary notice of, 1874, 1199.
- Dupré, Anatole**, a new eudiometer, 1875, 788.
- modifications of the urometers of Yvon and of Magnier de la Source, and of Knop's azotometer, 1875, 917.
- estimation of nitrogen in organic substances, 1876, ii., 115.
- researches on gallium, 1878, A., 472.
- substitution of sulphur for oxygen in the fatty acids, 1878, A., 568.
- Dupré, August**, the specific heat and other physical characters of mixtures of methyl alcohol and water, and certain relations existing between the specific heat of a mixture and the heat evolved or absorbed in its formation, 1873, 466.

- Dupré, August**, determination of alum in bread, 1874, 916.
- examination of whiskey and other spirits for methylated spirit and fusel oil, 1876, ii., 215.
- the detection of foreign colouring matters in wine, 1877, i., 234; ii., 227; 1880, T., 572.
- estimation of urea by means of hypobromite, 1877, i., 534.
- copper in food, 1877, ii., 511.
- detection of alum in flour, 1878, A., 915; 1879, A., 483.
- on accurate perception of colour-change in titration, 1881, A., 121.
- Dupré, August**, and **Henry Wilson Hake**, on two new methods for the estimation of minute quantities of carbon, (1) gravimetric (2) chromometric, and their application to water analysis, 1879, T., 159.
- on the estimation of organic carbon in air, 1881, T., 93.
- Dupuy, Albert**, direct formation of methyl-violet in cotton fibres, 1876, i., 817.
- Dupuy, Charles M.**, direct process for making wrought iron and steel, 1879, A., 565.
- direct process for making iron from ores, tap cinder, etc., 1882, A., 344.
- Duquesnel, H.**, neutral eserine hydrobromide, 1875, 1269.
- crystalline hyoseyamine, 1882, A., 535.
- Durand**, new gold-bath, 1877, ii., 235.
- Durand**, bark of the root of the pomegranate, 1879, A., 169.
- Durand, Louis**, resorcin dyes, 1878, A., 455.
- on gallein and cœrulein, 1878, A., 924.
- Durand-Claye, Léon**, partial analysis of twenty-one samples of water from the Suez Canal, 1874, 971.
- Durand-Claye, Léon**. See also **Henry Louis Le Chatelier**.
- Durassier, L.** See **Auguste Robert Stanislas Trève**.
- Durham, William**, suspension of clay in water, 1875, 37.
- suspension, solution, and chemical combination, 1878, A., 636.
- Durin, E.**, valuation of beetroots according to the density of the juice, 1875, 1284.
- on the commercial analysis of sugar and the influence of salts and glucose on its crystallisation, 1876, i., 761.
- cellulosic fermentation of cane sugar, 1876, ii., 540.
- Durin, E.**, cellulosic fermentation produced by vegetable organs; and probable utilisation of sugar for the production of cellulose in vegetation, 1877, i., 106.
- inversion of cane sugar, and consecutive alteration of the glucoses so formed, 1879, A., 369.
- inversion of sugar during manufacture, 1881, A., 127.
- Du Roi, Ph.**, and **Wilhelm Julius Otto Leopold Kirchner**, stall sampling in milk analysis, 1880, A., 925.
- Du Roi, Ph.** See also **Wilhelm Julius Otto Leopold Kirchner**, **Max Schrott**.
- Durrwell, Eug.**, adulteration of cochineal by zinc sulphate, 1876, i., 988.
- absorbing power of the soil, 1876, ii., 114.
- Durst, Otto**, microscopic researches on yeast, 1881, A., 835.
- Dusart, Lucien**, antiseptic property of heavy coal oil, 1874, 1189.
- Duval, Jules Edmond**, the mutual transformation of microscopic germs, 1876, i., 105.
- a new acid pre-existing in fresh mares' milk, 1876, i., 901.
- Duvillier, Edouard**, new method of preparing chromic acid, 1873, 39.
- action of nitric acid on lead chromate, 1873, 1005.
- detection of lead sulphate in commercial lead chromate, 1873, 1056.
- action of nitric acid on the phosphates and arsenates of barium and lead, 1876, i., 519.
- recovery of platinum from chloroplatinates, 1877, ii., 574.
- *n*-ethyloxybutyric acid and its derivatives, 1878, A., 489.
- *n*-methoxybutyric acid and its derivatives, 1878, A., 662.
- derivatives of *n*-methoxybutyric acid, 1879, A., 523.
- dimethylacrylic acid an isomeride of angelic acid, 1879, A., 706, 782.
- amido-acids from  $\alpha$ -bromocaproic acid, 1880, A., 543.
- new mode of forming dimethylacrylic acid, 1880, A., 624.
- compounds belonging to the creatine and creatinine groups, 1880, A., 897.
- amido-acids of  $\alpha$ -hydroxybutyric acid, 1881, A., 87.
- amido-acids derived from *iso*-hydroxyvaleric acid, 1881, A., 713.
- Duvillier, Edouard**, and **A. Buisine**, separation of ethylamines, 1879, A., 305.

- Duvillier, Edouard**, and **A. Buisine**, commercial trimethylamine, 1879, A., 912; 1880, A., 159.
- formation of tetramethylammonium nitrate, 1880, A., 545.
- action of ethyl chloride on ethylamine, 1880, A., 794.
- action of methyl bromide and methyl iodide on monomethylamine, 1881, A., 33.
- separation of trimethylamine from the commercial products, 1881, A., 419.
- separation of compound ammonias, 1881, A., 1025.
- Dwars, B. W.**, determination of quinine in certain of its salts, 1879, A., 488.
- on the iodosulphates of the quinine alkaloids, 1879, A., 982.
- Dwight, Geo. S.**, Strong's water gas system, 1880, A., 930.
- Dworzak, Hugo**, baryta in the ash of Egyptian wheat, 1875, 662.
- Dyckerhoff, R.**, chlorinated acetophenone, 1877, ii., 327, 481.
- Dyckerhoff, Rudolph**, economical value of various hydraulic cements, 1878, A., 813.
- on cement, 1880, A., 767.
- Dyer, Bernard**, analysis of milk, 1881, A., 1176.
- Dymock, W.**, chaulmoogra oil, 1876, ii., 207.
- Dyson, Septimus**. See *Thomas Edward Thorpe*.

## E.

- Early, William**, estimation of ferrous oxide in silicates, 1875, 286.
- Ebell, Paul**, isomeric mononitrobenzonaphthylamides, 1875, 272, 900.
- copper-ruby glass and cognate varieties, 1875, 485.
- crystallisation of metallic oxides from glass, 1876, ii., 336; 1878, A., 97.
- glass containing alkaline bases only, 1878, A., 689, 758.
- Ebell, Paul**. See also *Friedrich Ludwig Knapp*.
- Ebermann, E.**, manuring experiments with potash salts, 1879, A., 959.
- Ebermayer, Ed.**, electro-gilding by means of potassium ferrocyanide, 1878, A., 178.
- Ebermayer, Ernst**, chemical and physical action of the litter of leaves in woods, 1875, 1277.
- pathology of fruit trees, 1878, A., 163.
- Ebermayer, Ernst**, carbonic anhydride in soils, 1878, A., 1001.
- Ebert, Robert**, adipocere, 1876, ii., 110.
- Ebert, Robert**, and **Victor Merz**, naphthalenedisulphonic acid, 1876, i., 262.
- on two naphthalenedisulphonic acids and some derivatives, 1876, ii., 408.
- Ebert, Robert**. See also *Wilhelm Weith*.
- Ebrard, Rudolf**. See *Carl Graebe*.
- Ebstein, Wilhelm**, and **Julius Müller**, action of acids and alkalis on the ferment of the liver, 1875, 1210.
- Eccles, Herbert**, action of the copper-zinc couple on potassium chlorate and perchlorate, 1876, i., 856.
- Echols, W. H.**, temperatures of formation and decomposition of mercuric oxide, 1882, A., 18.
- Eckenbrecher, Curt von**, changes produced by weathering of phonolite, 1881, A., 700.
- metamorphoses of nepheline rocks, 1881, A., 1013.
- Eckert, H.** (and others), cultivation of *Vicia villosa*, 1882, A., 647.
- Eckstein, Albert**, use of parchment paper in osmose, 1881, A., 952.
- Edelmann, Th.**, new method of exhibiting the spectra of metals, 1873, 461.
- Eder, Josef Maria**, double haloid salts of cadmium, 1877, i., 689.
- action of potassium ferricyanide on metallic silver, and the conversion of silver negatives, 1877, ii., 234.
- various methods for determining nitric acid, 1877, ii., 643.
- action of ferricyanides on metallic silver, 1878, A., 35.
- solubility of silver salts, 1878, A., 379.
- estimation of tannin in tea, 1878, A., 918.
- estimation of nitric acid in well water, 1879, A., 274.
- examination of Chinese tea, 1879, A., 851.
- behaviour of gums and carbohydrates towards chromates under the influence of light, 1879, A., 911.
- a new chemical photometer, 1880, A., 361.
- composition of pyroxylin, 1880, A., 372.
- reducing properties of potassium ferrous oxalate, 1880, A., 544.
- estimation of ferrous oxide in presence of ferric oxide, organic acids and sugar, 1880, A., 583; 1882, A., 98.



- Eder, Josef Maria**, potassium ferrous oxalate and its use for developing photographic bromide of silver plates, 1880, A., 590.
- rapid developer for wet plate photographs, 1880, A., 765.
- aqueous varnish for prints on unglazed paper, 1881, A., 212.
- new developers for silver bromide dry plates, 1881, A., 317.
- aqueous shellac varnish, 1881, A., 482.
- decomposition of ferric chloride and some ferric salts of organic acids by light, 1881, A., 670.
- some properties of ammonium bromide, 1881, A., 682.
- photochemistry of silver bromide, 1881, A., 762.
- analysis of photographic gelatin and collodion emulsions, 1882, A., 111.
- cyanotypes, 1882, A., 113.
- heliographic engraving in lines and half tones, 1882, A., 1008.
- Eder, Josef Maria**, and **G. Pizzighelli**, photochemistry of silver chloride, 1882, A., 2.
- Eder, Josef Maria**, and **Victor Tóth**, an alkaline iron developing liquid, 1877, ii., 235.
- Eder, Josef Maria**, and **G. Ulm**, reaction of mercuriodide with sodium thiosulphate, 1882, A., 806.
- Eder, Josef Maria**, and **Eduard Valenta**, iron oxalates and some of their double salts, 1881, A., 713.
- Eder, Karl**, exhalation of water vapour by plants, 1876, ii., 113.
- Edger, A. J. M.** See **Nicholas Glendinning**.
- Edison, Thomas Alva**, action of heat on metals in a vacuum, 1879, A., 1018.
- Edlund, Eric**, the chemical action of a galvanic current and the distribution of the free electricity on the surface of conductors, 1874, 15.
- the electromotive force produced by the flow of liquids through tubes, 1879, A., 998.
- electrical resistance of vacuum, 1882, A., 353.
- electrical resistance of gases, 1882, A., 681.
- Edmund, James**, formation of ultramarine during the incineration of bread, 1876, i., 880.
- Edzardi, C.**, analyses of the ash of certain spice seeds, 1880, A., 915.
- Egger, E.**, bilic acid, an oxidation product of cholic acid, 1879, A., 810.
- Egger, E.**, estimation of fat in milk, 1882, A., 778.
- Eggertz, V.**, determination of phosphorus in iron and iron ores, 1881, A., 465.
- colorimetric estimation of carbon in iron, 1882, A., 98.
- Egleston, Thomas**, various uses for blast furnace slags, 1873, 656.
- Egli, Walter**, preparation of benzene-disulphonic acid, 1876, i., 931.
- Egoroff, Nik. G.**, telluric rays of the solar spectrum, 1881, A., 1091.
- Ehrenberg, Alexander.** See **Ernst Carstanjen**.
- Ehrenwerth, Fritz von**, the use of Eggertz' method for estimating carbon in the selection of steel, 1875, 1291.
- Ehrhard, A. C.**, *Phytolacca decandra*, 1880, A., 412.
- Ehrhardt, A. E.**, to what extent is sprouted grain capable of further germination? 1882, A., 987.
- Ehrhardt, Wilhelm.** See **Emil Fischer**.
- Ehrmann, L.** See **Claude Bernard**.
- Eichler, Erwin**, octyl derivatives, 1880, A., 229.
- Eijkman, Johan Frederik**, *Illicium religiosum*, 1881, A., 918.
- alkaloids of the Papaveraceæ, 1882, A., 1112.
- Eiseler, E.**, the ethers of aromatic hydroxamic acids, 1875, 766.
- Eisenberg, James**, mesidine derivatives, 1882, A., 955.
- Eisenberg, Louis Julius**, action of ferro- and ferri-cyanic acids on amines, 1880, A., 231.
- methylamine in commercial trimethylamine hydrochloride, 1881, A., 83.
- separation of trimethylamine from the commercial hydrochloride, 1881, A., 246.
- ferrocyanides of amines, 1881, A., 261.
- Eissfeldt (Eipfeldt?), Herrmann**, experiments with Scheibler's method of analysing raw sugar, 1880, A., 144.
- Eissfeldt, Herrmann**, and **Camillo Thumb**, revivification of animal charcoal by ammonia, 1873, 303.
- Eitner, Wilm.**, use of sodium sulphide in tanning, 1876, i., 982.
- the influence of the constituents of waters on tanning, 1878, A., 259.
- preparation of leather, 1881, A., 859.
- use of algarobilla in tanning, 1882, A., 908.



- Ekin, Charles**, presence of silver in commercial subnitrate of bismuth, 1873, 308.
- Ekman, Fr. L.**, currents at the mouths of rivers; contribution to our knowledge of ocean currents, 1876, ii., 495.
- Ekman, Gustav**. See **Otto Pettersson**.
- Ekstrand, Åke Gerhard**, retene, 1876, i., 68.
- retene and some of its derivatives, 1876, ii., 514; 1877, ii., 497.
- retenesulphonic acids, 1878, A., 154.
- a trinitronaphthol, 1878, A., 508.
- hydroquinonephthalein, 1878, A., 675.
- nitronaphthoic acids, 1880, A., 261.
- Ekstrand, Åke Gerhard**. See also **Otto Pettersson**.
- Elander, S. U.**, action of sulphonic chlorides on urea, 1881, A., 164.
- Elbs, Karl**. See **Adolph Claus**.
- Elder, Harry Montagu**. See **George Farrer Rodwell**.
- Ellenberger, Wilhelm**, and **Victor Hofmeister**, digestive fluids and digestion in horses, 1882, A., 1119.
- Elliott, James F.** See **Lewis Mills Norton**.
- Elsässer, Emil**, electrolysis with evolution of hydrogen at both poles, 1877, i., 678; 1878, A., 545.
- Elsbach, Leo**, compounds of naphthaquinone with toluidine and ethylaniline, 1882, A., 853.
- Elsner**, easy method of cleaning silver, 1873, 1072.
- Eltekoff, Alexander P.**, preparation of glycols, 1873, 1016.
- decomposition by heat (dissociation) of *isobutyl* bromide, 1876, i., 541.
- constitution of amylene from fermentation amyl alcohol, 1878, A., 126.
- action of sulphuric acid on mixed ethers, 1878, A., 129.
- synthesis of olefines, 1878, A., 482.
- the order in which the separation of the elements of the hydric acids takes place in the haloid derivatives of the olefines, 1878, A., 563.
- reactions of the halogen compounds of the olefines, 1879, A., 35.
- atomic migration, 1881, A., 400.
- Eltekoff, Alexander P.** See also **Hermann I. Lagermark**.
- Eltoft, Thomas**, obituary notice of, 1881, T., 189.
- Ely, John Slade**. See **Russell H. Chittenden**.
- Embden, F. C. E. van**, oxidation of alantoin with ferricyanide of potassium, 1873, 1025.
- Emich, Friedrich**, Hüfner's reaction with bullock's bile and some properties of glycocholic acid, 1882, A., 1218.
- Emken, F.**, influence of malt liquids on digestion, 1881, A., 752.
- Emmerich, Rudolf**, influence of impure water on health, 1880, A., 488.
- Emmerling, Adolph**, the chemical processes in the plant, 1873, 79; 1875, 176; 1877, ii., 348.
- derivatives of acetone, 1873, 496.
- synthesis of glycocine, 1874, 253.
- formation of vegetable albumin, 1880, A., 341.
- carbonyl bromide, 1880, A., 627.
- determination of the relative values of precipitated and soluble phosphates, 1881, A., 309.
- the loss which newly mown grass suffers when exposed to rain, 1881, A., 455.
- oats manured with steamed and dissolved bones, 1882, A., 333.
- preservation of stable manure in deep stalls, 1882, A., 333.
- Emmerling, Adolph**, and **Carl Engler**, action of sodium amalgam on acetophenone, 1874, 74.
- synthesis of indigo-blue, 1877, i., 321.
- Emmerling, Adolph**, and **Gustav Leges**, exhaustion of soils by sodium nitrate, 1882, A., 330.
- the reducing substances formed by the action of potassium hydroxide on grape sugar, 1882, A., 490.
- manure from deep stalls, 1882, A., 992.
- Emmerling, Adolph**, and **Richard Wagner**, clover sickness, 1880, A., 505.
- monobromacetone and the alcohol of acetone, 1880, A., 867.
- Emmerling, Oscar**, compounds of *p*-chlorobenzoic acid, 1875, 1261.
- metallic phosphides, 1879, A., 508.
- abietic acid, 1880, A., 264.
- Emmerling, Oscar**, and **Friedrich Ludwig Alphons Oppenheim**, a new hydroxybenzoic acid, 1876, ii., 85.
- a new ether of acetoacetic acid, 1876, ii., 505.
- oxidation of ethyl acetoacetate, 1876, ii., 505.
- action of nitric acid on oxynitric acid, 1876, ii., 523.

- Emmert, August**, and *Joh. Friedrich Reingruber*, dimethylnaphthalene, 1882, A., 733.
- Emmert, August**. See also *Carl Adam Bischoff*.
- Emmons, S. F.**, on some phonolites of the Velay and the Westerwald, 1875, 621.
- Ensmann, H.**, absorption spectrum of a solution of nickel nitrate, 1874, 113.
- Endemann, Hermann**, soluble basic salts of zirconium, 1875, 1162.
- *p*-cresylic, carbolic, and salicylic acids, as disinfectors, 1876, i., 990.
- boric acid as a preservative, 1880, A., 767.
- composition of ultramarine, 1881, A., 509.
- Endemann, Hermann**, and *George A. Prochazka*, sweet potatoes, 1880, A., 915.
- — standard soda solution, 1880, A., 924.
- — detection of copper, 1880, A., 924.
- Engel, Gustav**, action of infusorial earth on colouring matters, 1880, A., 427.
- Engel, Rodolphe Charles**, the purification of hydrochloric acid, 1873, 840.
- researches on hydrogen arsenide, 1874, 442.
- creatine, 1874, 985.
- production of oxamic acid by the oxidation of glycocine, 1875, 251, 357.
- substitution of mercury for hydrogen in creatine, 1875, 756.
- characteristic reactions of glycocine, 1875, 885, 1256.
- metallic derivatives of cyanamide and dicyanodiamide, 1876, i., 909.
- on some reactions of nitrogenous animal substances, 1876, i., 943.
- researches on taurine, 1876, ii., 72.
- phenol in the animal economy, 1881, A., 114.
- platinous hypophosphite, 1881, A., 226.
- manufacture of potassium carbonate, 1881, A., 1087.
- Engel, Rodolphe Charles**, and *Joseph de Girard*, method of producing acetal, 1880, A., 458.
- Engel, Rodolphe Charles**, and *A. Moitiesier*, dissociation of chloral hydrate, 1878, A., 719; 1879, A., 500.
- — dissociation of ammonium sulphide, 1879, A., 879.
- — dissociation of ammonium hydrosulphide, 1879, A., 879, 880; 1882, A., 269.
- Engel, Rodolphe Charles**, and *A. Moitiesier*, dissociation of butylchloral hydrate, 1881, A., 407.
- — dissociation of ammonium carbonate, 1882, A., 162.
- Engel, Rodolphe Charles**, and *Jules Ville*, solubility of magnesium carbonate in water charged with carbonic acid, 1881, A., 1102.
- Engel, Rodolphe Charles**, and *G. Vilmain*, on the density of leucin, 1876, i., 907.
- Engelbrecht, Adolph**, *α*-*p*-chlorosulphotoluene, nitro-*p*-chlorotoluene, and amido-*p*-chlorotoluene, 1874, 986.
- Engelbrecht, Adolph**. See also *Albert Ladenburg*.
- Engelhorn, Fritz**. See *Rudolph Fittig*.
- Engelmann**, soft and brilliant photographs, 1874, 931.
- Engelmann, Th. Wilhelm**, new method for detecting the evolution of oxygen by vegetable or animal organisms, 1882, A., 335.
- Engler, Carl**, amidacetoneitrile, 1874, 76.
- on the formation of triphenylbenzene and the action of  $\text{PCl}_5$  on acetophenone, 1875, 889.
- an improvement of Hofmann's vapour density apparatus, 1877, i., 269.
- a sulphuretted derivative of acetophenone, 1879, A., 61.
- sulphuretted derivatives of benzophenone, 1879, A., 61.
- tetraphenylethane, 1879, A., 68.
- Engler, Carl**, and *H. Bethge*, derivatives of secondary phenylethyl alcohol (*acetophenonic alcohol*) and other ketonic alcohols, 1875, 65.
- Engler, Carl**, and *Robert Haas*, apparatus for testing the inflammability of petroleum, 1881, A., 469.
- Engler, Carl**, and *H. Heine*, action of ammonia and its derivatives on ketones in presence of dehydrating agents, 1873, 1036.
- Engler, Carl**, and *Janecke*, preparation of indole, 1877, i., 321.
- — properties of indole, 1877, i., 322.
- Engler, Carl**, and *A. Leist*, a new method of obtaining ketones, 1873, 901.
- — acetocinnamone and other products of the dry distillation of cinnamate and acetate of calcium, 1873, 901.
- Engler, Carl**, and *L. Volkhausen*, nitro- and amido-derivatives of benzaniilide, 1875, 648.

- Engler, Carl.** See also *Adolph Emmerling*.
- Engström, Nils,** analysis of orthite, vasite, erdmannite, tritonite and archenite, 1878, A., 115.
- experiments with Laval's separator, 1880, A., 933.
- Eppinger, Oscar,** action of ethylamine and diethylamine on acetone, 1880, A., 868.
- Erdmann, Ed. Otto,** anhydrous milk sugar, 1881, A., 151.
- Erdmann, Julius,** colouring matter of red wine, 1879, A., 171.
- Erdmenger, L.,** Portland cement from dolomitic limestone, 1874, 96; 1875, 672.
- the changes which take place during the setting of Portland cement, 1876, i., 124.
- the use of alkalis in the manufacture of Portland cement and the crumbling disintegration of the latter, 1876, i., 967.
- Eremin,** influence of the temperature of the voltaic arc on barium and calcium sulphates, 1882, A., 362.
- Erhard, Theodor,** electrical properties of indium, 1882, A., 262.
- Erhard, Theodor,** and *Alfred Wilhelm Stelzner*, fluid enclosures in topaz, 1881, A., 25.
- Erhart, C.,** some colouring matters derived from phenol, rosolic acid, aurin, corallin, and azurin, 1878, A., 315.
- Erismann, Friedrich,** on the contamination of air arising from artificial illumination, and on the distribution of carbonic anhydride in close rooms, 1877, ii., 810.
- Erkmann, Ludwig,** microscopic photography, 1873, 307.
- wine from lees, 1874, 724.
- Erlenmeyer, Emil,** the constitution of the diazo-compounds, 1875, 166.
- formation of aldehyde from derivatives of benzene, 1876, ii., 184.
- formation of vanillin from eugenol, 1876, ii., 198.
- remarkable transformation of *n*-butyric acid into *isobutyric* acid, 1876, ii., 399.
- *n*-valeric acid from *n*-caproic acid, 1877, i., 590.
- simple method of preparing metallic cyanides, 1877, i., 591.
- extraction of the so-called "soluble phosphoric acid" from superphosphates, 1877, i., 759.
- constitution of the radicle  $C_6H_5$  in eugenol and anethol, 1877, ii., 479.
- Erlenmeyer, Emil,** miscellaneous notes, 1877, ii., 581.
- studies on the phosphates, 1878, A., 269; 1879, A., 201.
- behaviour of acrylic acid when fused with alkalis, 1878, A., 662.
- preparation of ethylene and ethylene compounds, 1878, A., 845.
- the two isomeric dibromopropanes, 1879, A., 908.
- constitution of phenyl-halogen-propionic acids, 1880, A., 42.
- synthesis of substituted guanidines, 1880, A., 243.
- phenyllactic acid, 1880, A., 471.
- phenylbromolactic acid, 1880, A., 472.
- oxypropionic acid (*oxyacrylic acid*), 1880, A., 544.
- amidolactic acid, 1880, A., 713.
- action of dehydrating agents on glyceric and tartaric acids, 1881, A., 417.
- notes: bromacrylic acid: cinnamic acid derivatives: amidocapronitrile: substituted guanidines: superphosphates, 1882, A., 141, 190.
- halogenised and hydroxylised organic acids, 1882, A., 492.
- Erlenmeyer, Emil,** and *C. Antz*, action of ammonium citrate on phosphates, 1881, A., 847.
- Erlenmeyer, Emil,** and *Hans Bunte*, preparation of ethylene and of ethylene bromide, 1873, 1118.
- Erlenmeyer, Emil,** and *A. Kriechbaumer*, preparation of methyl ether, 1874, 975.
- Erlenmeyer, Emil,** and *Andreas Lipp*, phenyl- $\alpha$ -amidopropionic acid, 1882, A., 971.
- — synthesis of tyrosine, 1882, A., 1063.
- Erlenmeyer, Emil,** and *C. L. Müller*, halogenated and hydroxy organic acids, 1882, A., 598.
- Erlenmeyer, Emil,** and *S. C. Passavant*, nitriles from hydrocyanic acid and acetaldehyde-ammonia, 1880, A., 313.
- Erlenmeyer, Emil,** and *Adolf von Planta*, activity of bees, 1880, A., 415, 725.
- Erlenmeyer, Emil,** and *Otto Sigel*, amidocaprylic acid and oxycaprylic acid, 1874, 981.
- the nitrile and amide of oxycaprylic acid, and the amide of amidocaprylic acid, 1875, 144.
- the true nitrile of leucic acid, 1875, 145.

- Erlenmeyer, Emil**, and **Otto Sigel**, amidocaprylic acid, 1875, 1007.
- on hydroxyacrylic acid (*octylactic acid*) and its nitrile and amide, 1875, 1010.
- on the mode of origin of amidocaprylic acid, 1875, 1012.
- Erlenmeyer, Emil**, **Otto Sigel**, and **Ludwig Belli**, oxidation of butyric, caproic, succinic and oxalic acids by nitric acid, 1874, 980.
- oxidation of carbon compounds, 1876, i., 893.
- Ernst, E.**, preservation of molasses waste, 1882, A., 651.
- conversion of molasses waste into gas, 1882, A., 787.
- Esbach, G.**, estimation of urea in urine, 1879, A., 1067.
- urea, sugar and sodium hypobromite, 1881, A., 316.
- Escherich, C.** See **Wilhelm Michler**.
- Eschka, Adalbert**, estimation of sulphur in coal and coke, 1874, 1007.
- analysis of soft lead, 1875, 1302.
- Esilman, Alexander**, estimation of alumina and iron in phosphates, 1874, 190.
- determination of iron in ironstones, 1875, 285.
- distillation of ammonia in presence of sulphocyanates, 1875, 783.
- purification of brown sulphate of ammonia, 1876, i., 445.
- Esilman, Alexander**. See also **Peter Spence**.
- Esoff, Johannes**, urobilin in the urine, 1876, ii., 108.
- Essner, Jules Charles**, action of amylene hydrochloride and of amylene on benzene in presence of aluminium chloride, 1882, A., 46.
- Estcourt, Charles**, estimation of tannic acid, 1874, 712.
- butter analysis, 1877, i., 348.
- desirability of fixing by analysis some standards of value for beer based on the qualities usually sold in large towns, 1879, A., 290.
- analyses of the waters of Lake Thirlmere and the river Vyrnwy, 1879, A., 906.
- analysis of Liebig's extract of meat and an imitation of it, 1882, A., 248.
- Estor, Alfred**, and **Camille Saintpierre**, respiratory combustion; oxidation of sugar in the arterial system, 1873, 398.
- Estor, Alfred**. See also **Antoine Béchamp**.
- Etard, Alexandre Léon**, salts of chromium sesquioxide, 1875, 1164; 1877, ii., 407.
- action of chlorochromic acid on organic bodies, 1877, i., 584.
- preparation of alkaline nitrites, 1877, i., 685.
- monochloracetones, 1877, ii., 427.
- nitrotoluquinone and chloranilic acid, 1877, ii., 476.
- researches on the chromates, 1877, ii., 847.
- preparation of amylene, 1878, A., 392.
- double compounds of metallic sesquisulphates, 1878, A., 838.
- researches on the sulphates, 1879, A., 104, 593.
- oxidation of aromatic compounds, 1879, A., 320.
- synthesis of aromatic aldehydes; cuminaldehyde, 1880, A., 467.
- position of boron in the series of elementary bodies, 1881, A., 20.
- chlorochromic acid as an oxidising agent, 1881, A., 581.
- action of ammonium chlorido on glycerol, 1881, A., 708.
- homologue of pelletierine, 1881, A., 1046.
- euproscopic sulphites, 1882, A., 280, 1028.
- cuprous sulphites and their derivatives, 1882, A., 1165.
- Etard, Alexandre Léon**, and **Henri Moissan**, preparation of hydrogen selenide and hydrobromic acid, 1881, A., 18.
- Etard, Alexandre Léon**. See also **Auguste André Thomas Cahours**, **Henri Gal**, **Emile Justin Armand Gautier**.
- Etti, Carl**, bixin, 1874, 907; 1878, A., 739.
- the tannin of hops, 1876, i., 927.
- the catechins, 1877, ii., 488; 1882, A., 67.
- tannin and bitter principle of hops, 1878, A., 797.
- Malabar kino and kinoin, 1879, A., 159.
- quercitannic acid, 1881, A., 277.
- levulin, 1882, A., 158.
- Etzinger, Johann**, digestibility of the gelatinous tissues, 1875, 94.
- Eugling, Wilhelm**, composition of the colostrum of the cow, 1879, A., 815.
- inversion of beet sugar for wine, 1880, A., 833.
- Eugling, Wilhelm**, and **von Klenze**, Alpine dairy produce, 1879, A., 857.



- Eugling, Wilhelm**, and *Eug. Rüf*, preparation of crude and refined milk sugar, 1882, A., 1014.
- Eugling, Wilhelm** (and others), machines for milk churning, 1880, A., 357.
- Eugster, Edmund**. See *Ernst Schulze*.
- Eustache, G.** See *Antoine Béchamp*.
- Evans, John Castell**. See *Edward Frankland*.
- Everhart, Edgar**. See *Albert R. Leeds*.
- Ewald, August**, the blood in Apnoea, 1873, 1247.
- Ewald, H.**, some cœrulignone derivatives, 1879, A., 253.
- Exner, Franz**, passage of gases through liquid diaphragms, 1876, ii., 163.
- electrolysis of water, 1879, A., 577.
- galvanic polarisation, 1879, A., 577; 1881, A., 775.
- galvanic polarisation of platinum in water, 1879, A., 578.
- theory of the galvanic couple, 1881, A., 335.
- production of electricity by contact of heterogeneous metals, 1881, A., 864.
- theory of inconstant galvanic cells, 1881, A., 866.
- galvanic elements which consist of elementary substances; electric conductivity of bromine and iodine, 1882, A., 679.
- Exner, Franz**, and *Guido Goldschmiedt*, influence of temperature on the electric conductivity of liquids, 1878, A., 830.
- Eykman**. See *Eijkman*.
- Eyndhoven, A. J. van**, gas lighting, 1879, A., 85.
- Ezweiler**. See *Victor Merz*.
- F.**
- Fabinyi, Rudolf**, diphenolethane, 1878, A., 430.
- Fahlberg, Constantin**, myacetic (*glycolic*) acid, 1874, 142.
- new volumetric method for determining zinc, 1875, 665.
- liquid toluenesulphonic chloride and Beckurt's so-called toluene-*m*-sulphonic acid, 1879, A., 804.
- *α*-toluenesulphonic acid and its derivatives, 1881, A., 816.
- Fahlberg, Constantin**, and *Malvern Wells Iles*, new method for the estimation of sulphur, 1878, A., 1005.
- Fahlberg, Constantin**, and *Ira Remsen*, oxidation of *o*-toluenesulphamide, 1879, A., 628.
- Fairley, Thomas**, analysis of water taken from the "Old Crescent Well," Harrogate, 1875, 243.
- a new oxide and acid of uranium, 1876, i., 192.
- study of hydrogen dioxide and of certain peroxides, including experiments to determine the heat of formation of the oxygen molecule, 1877, i., 125.
- the blowing wells near Northallerton, 1882, A., 372.
- Falck, Ferd. Aug.**, estimation of chlorine in urine, 1875, 1058.
- Falières**, preparation of pure potassium bromide, 1873, 135.
- testing of potassium bromide, 1873, 191.
- Falk, Friedrich**, behaviour of some ferments in the animal system, 1882, A., 637.
- Famintzin, A.**, intensity of light and liberation of carbonic anhydride by plants, 1881, A., 1060.
- Farries, Thomas**. See *Charles Thomas Kingzett*.
- Farsky, Franz**, estimation of atmospheric carbonic acid at Tabor, Bohemia, in 1874 and 1875, 1878, A., 164.
- compounds of salicylic acid with albuminoids, 1878, A., 224.
- salicylic acid as a preventive of house-fungus, 1879, A., 1080.
- growth of plants in artificial solutions, 1880, A., 337.
- potash salts as a manure, 1881, A., 1072; 1882, A., 770.
- comparison of fine grained and coarse grained superphosphate, 1882, A., 90, 550, 653.
- a shortened method of soil analysis, 1882, A., 245.
- analysis of the mineral well at St. Anna, near Cernowic, 1882, A., 371.
- constituents of the ashes of cockchafer, 1882, A., 1223.
- analysis of Stassfurt manure-salts, 1882, A., 1229.
- Fassbender, G.**, quantitative determination of albumin by enipric hydrate, 1881, A., 205.
- analyses of fodder, 1881, A., 1165.
- Fassbender, R.**, some double salts of calcium sulphate, 1877, i., 167; 1879, A., 203.
- the fluorescent body in *Atropa Belladonna*, 1877, i., 213.
- Fassbender, R.** See also *Rörsch*.
- Fauck, Albert**, petroleum exploration in Galicia and America, 1873, 308.



- Fauconnier, Adrien**, estimation of urea, 1880, A., 513.
- Faodel, M.**, manufacture of alum under pressure, 1876, ii., 225.  
— cellulose manufacture, 1876, ii., 231.
- Faust, August**, frangulin and frangulic acid, 1873, 503.  
— constitution of the chlorophenols, the nitrophenols, and the chloronitrophenols, 1873, 633.  
— action of potash on the monochlorophenol boiling at  $218^{\circ}$ , 1874, 61.  
— correction of former notices on chloronitrophenols, 1873, 364.
- Faust, August**, and **Ignaz Homeyer**, eucalyptol, 1874, 475.  
— oil of eucalyptus, 1875, 371.  
— oil of wormseed and cymene, 1875, 371.
- Faust, August**, and **Hermann Müller** (Hersfeld), *m*-chlorophenol and its nitro-derivatives, 1873, 65; 1875, 156.
- Fautrat, L.**, influence of forests on the rainfall, 1880, A., 737.
- Favre, Pierre Antoine**, observations on the criticisms which have been made respecting the mercury calorimeter, 1873, 132, 838.  
— continuation of thermic researches on the condensation of gases by solid bodies; absorption of hydrogen by platinum black, 1874, 15, 1050.  
— thermochemistry of hydrogen, 1874, 1048.  
— the equivalence and transformation of the chemical forces, 1875, 33.
- Favre, Pierre Antoine**, and **F. Roche**, researches on the electrolysis of alkaline carbonates and bicarbonates, 1874, 861.
- Favre, Pierre Antoine**, and **C. Alpha Valson**, researches on crystalline dissociation: estimation and distribution of the force in saline solutions, 1873, 31; 1874, 120, 650; 1875, 330.  
— — researches on crystalline dissociation: the alums, 1873, 32.  
— — researches on crystalline dissociation: a new method of studying the coercive action of salts on water at different temperatures, 1873, 129.
- Faye, Hervé Aug. Et.**, explosions in coal mines, 1876, i., 981.
- Fayer, (Sir) Joseph**. See **Thomas Lauder Brunton**.
- Febve, P.**, oil of wild thyme, 1882, A., 524.
- Feddersen, Bernhard Wilhelm**, on thermo-diffusion of gases, 1873, 834.
- Feder, Ludwig**, separation of ammonium chloride in the urine, 1878, A., 237, 993.
- Feder, Ludwig**, and **Erwin Voit**, formation of urea from ammonia salts of organic acids, 1881, A., 453.
- Fedoroff**, relation between the atomic weights of elementary bodies, 1882, A., 358.
- Fehlau**, flesh-meal as fodder for milch cows, 1880, A., 501.
- Feichtinger**, cause of the acid reaction exhibited by some kinds of paper, 1882, A., 1339.
- Feil, Ch.** See **Edmond Fremy, Victor de Luynes**.
- Fels, J.**, analysis of chrome ores, 1877, ii., 514.
- Feltz, Eugène**, action of crystallisable sugar on Fehling's solution, 1873, 296.  
— estimation of sugar by Barreswil's process, 1873, 1060.
- Feltz, Eugène**, and **H. Briem**, proportion of sugar to the weight of beetroots, 1880, A., 519.
- Feltz, V.**, experiments showing that the poisonous properties of putrified blood arise from organic ferments, 1877, ii., 506.
- Feltz, V.**, and **Ch. E. Eugène Ritter**, action of sodium salts of bile acids when injected into the animal system, 1874, 995.  
— — on the appearance of biliary salts in the blood and urine caused by certain forms of poisoning, 1876, i., 410.  
— — action of fuchsine introduced into the stomach and the blood, 1877, i., 487.
- Fenton, Henry John Horstman**, action of hypochlorites on urea, 1878, T., 300.  
— comparison of the actions of hypochlorites and hypobromites on some nitrogen compounds, 1879, T., 12.  
— the action of phosgene on ammonia, 1879, T., 793.  
— tartaric acid reaction, 1881, A., 655.  
— transformation of urea into cyanamide, 1882, T., 262.
- Fernbach, Aug.**, action of soda on glycerol, 1881, A., 145.
- Fernholz, Johann**. See **Louis Habel**.
- Ferray, Edouard Henri**. See **Pierre Maxime Alexandre Buisson**.

- Ferrière, E.**, action of ether upon iodides, 1873, 365.  
 — a new aniline-red, 1873, 1272.
- Fesca, Max**, mechanical analysis of soils, 1879, A., 673.  
 — contribution to the agronomic estimation of soils, 1882 A., 991.
- Feser, Johann**, researches on splenic fever, 1882, A., 543.
- Festing, Edward Robert**. See *William de Wivestie Abney*.
- Feuerlein, Carl**, aromatic thiocarb-amides, 1880, A., 44.
- Feuerlein, Carl**. See also *Alexander Herzfeld*.
- Feussner, Karl**. See *Eugen Bamberger*.
- Ficinus, Osear**, amount of fat in ergot of rye, 1874, 177.  
 — preparation of valerianic acid, 1874, 299.  
 — preparation of chromic acid, 1874, 546.  
 — preparation of pure tartaric acid, 1879, A., 917.
- Fieberg, E.** See *Ernst Albert Schmidt*.
- Fiedler, M.**, fermentation of molasses, 1880, A., 931.  
 — influence of sodium nitrate on absorption of phosphoric acid and potash, 1881, A., 457.
- Field, Alfred W.** See *Charles Loring Jackson*.
- Field, Frederick**, note on a reaction of the acetates upon lead salts, with remarks on the solubility of lead chloride, 1873, 575.  
 — an instance of solubility of silver chloride in sunlight, 1873, 845.  
 — ludlamite, a new Cornish mineral, 1877, i., 580.  
 — a variety of cronstedite, 1878, A., 480.  
 — detection of iodine in urine, 1881, A., 644.  
 — laboratory observations, 1881, A., 644.  
 — detection of small quantities of platinum, 1881, A., 649.
- Fievez, Ch.**, relative intensity of the spectral lines of hydrogen and nitrogen: its bearing on the constitution of nebulae, 1881, A., 69.  
 — widening of the hydrogen lines, 1881, A., 955.  
 — spectrum of magnesium and constitution of the sun, 1881, A., 955.
- Figuera, P.** See *Domenico Amato*.
- Fileti, Michele**, cupric glucosate, 1875, 630.  
 — cyanide of acetyl, 1875, i., 570.  
 — cinchonine, 1879, A., 655.
- Fileti, Michele**, chemical nature of the essence of *Laurocerasus* and of bitter almonds, 1879, A., 719.  
 — a new eumophenol, 1880, A., 583.  
 — two modifications of amidocumic acid: acetamidocumic acid, 1881, A., 424.  
 — distillation of cinchonine with zinc, 1881, A., 446.  
 — notes on gas analysis, 1881, A., 462.  
 — molecular weight of mercurous chloride, 1882, A., 466.
- Fileti, Michele**, and *Augusto Piccini*, decomposition of phenylethylamine hydrochloride, 1879, A., 922.  
 — decomposition of ethylamine hydrochloride by heat, 1880, A., 30.
- Fileti, Michele**, and *Robert Schiff*, constitution of cyanamide, 1877, ii., 306, 733.
- Fileti, Michele**. See also *Emanuele Paternò, Guido Tizzoni*.
- Filhol, Edouard**, on the nature of the sulphur compound contained in the thermal waters of the Pyrenees, and the changes which alkaline sulphides undergo in dilution, 1873, 861.  
 — on the nature of the sulphuretted compound which mineralises the thermal waters of the Pyrenees, 1874, 1149.  
 — new observations on the chemical composition of the waters of Bagnères-de-Luchon, 1874, 1150.  
 — note on chlorophyll, 1874, 1173; 1875, 371; 1876, ii., 111.  
 — felspars from the valley of Bagnères-de-Luchon, 1881, A., 692.  
 — action of sulphur on alkaline sulphides in dilute solutions, 1882, A., 141.  
 — composition of the mineral water of Barèges, 1882, A., 293.
- Filhol, Edouard**, and *Jean Baptiste Senderens*, action of sulphur on certain metallic solutions, 1881, A., 1097.  
 — a new series of phosphates and arsenates, 1881, A., 1101.  
 — phosphates neutral to litmus, 1882, A., 693.  
 — arsenates neutral to litmus, 1882, A., 1267.
- Filsinger, F.**, preparation of lithium carbonate and some new compounds of lithium from lepidolite, 1877, i., 441.
- Fink, F.**, photostereotyping, 1874, 930, 1020.

- Finkener, R.**, estimation of phosphoric acid as ammonium phosphomolybdate, 1879, A., 275.
- Finkler, Dittmar**, on different actions of pepsin, 1875, 1043.
- isopepsin, 1877, i., 483.
- production of heat in warm blooded animals, 1878, A., 519.
- Finkler, Dittmar, and Ernst Oertmann**, influence of respiration on the metamorphosis of tissue, 1877, i., 482.
- Finot, Et.**, analysis of the gases of the Grotta del Cane, 1877, i., 448.
- Finot, Et., and Armand Bertrand**, estimation of carbon disulphide in alkaline sulphocarbonates, 1877, i., 744.
- Finot, Et.** See also **Armand Bertrand**.
- Fischer, Bernhard, and Julius Müller**, how long after death do the evidences of phosphorus poisoning remain in the body? 1876, ii., 669.
- Fischer, Emil**, fluorescein and phthalcinorein, 1875, 159; 1877, i., 205.
- action of strong sulphuric acid on æterulignone and hydroæterulignone, 1875, 1021.
- aromatic hydrazine compounds, 1875, 1034; 1876, i., 713; ii., 527; 1877, i., 619; ii., 887.
- on fatty hydrazine compounds, 1876, i., 576, 911; 1879, A., 450; 1880, A., 234.
- hydrazine compounds, 1878, A., 302.
- ferrocyanides of the amine bases, 1878, A., 407.
- chlorine compounds of naphthalene, 1878, A., 676, 888.
- *o*-hydrazinebenzoic acid, 1880, A., 647.
- furfuraldehyde, 1880, A., 798; 1882, A., 499.
- separation and estimation of arsenic, 1881, A., 195.
- *o*-hydrazinecinnamic acid, 1881, A., 598.
- caffeine, 1881, A., 614; 1882, A., 217, 628.
- tolane diiodide, 1882, A., 521.
- conversion of xanthine into theobromine and caffeine, 1882, A., 981.
- Fischer, Emil, and Emil Besthorn**, thiocarbamides of phenylhydrazine, 1882, A., 1091.
- Fischer, Emil, and Wilhelm Ehrhardt**, ethyl derivatives of phenylhydrazine, 1878, A., 573; 1880, A., 242.
- Fischer, Emil, and Otto Fischer**, rosaniline, 1876, ii., 529; 1878, A., 573, 791; 1881, A., 162.
- Fischer, Emil, and Otto Fischer**, aurin, 1878, A., 576.
- certain colouring matters of the rosaniline group, 1879, A., 236, 787; 1880, A., 390.
- triphenylmethane 1879, A., 326; 1882, A., 62.
- triphenylmethane and rosaniline, 1879, A., 384.
- remarks on Doebner's communication on malachite-green, 1879, A., 787.
- Fischer, Emil, and Edward Renouf**, hydrazinebenzoic acids, 1882, A., 1068.
- Fischer, Emil, and H. Troschke**, amarine and lophine, 1881, A., 51.
- Fischer, Eugen**, a new series of dye-stuffs, 1880, A., 474.
- phenanthrenedisulphonic acid and its derivatives, 1880, A., 478.
- Fischer, Ferdinand**, estimation of nitric acid by indigo, 1873, 1054; 1875, 481.
- contamination of a well by the waste from a gas works, 1874, 395.
- on boiler incrustation and water for feeding boilers, 1874, 1021.
- estimation of nitrous acid in potable waters, 1875, 185.
- cremation and burial, 1875, 676, 1304.
- estimation of methyl alcohol in commercial wood-spirit, 1875, 1053.
- boiler incrustations and their prevention, 1876, ii., 334.
- temperature and composition of the gases evolved from ultramarine furnaces, 1877, i., 111.
- on the temperature required in Leblanc's soda process, and the composition of the gases evolved, 1877, i., 236.
- conditions which should be fulfilled by water for domestic use, 1877, ii., 944; 1878, A., 456.
- purification of water for boilers, 1878, A., 168.
- burning of bricks in annular kilns, 1878, A., 690, 761, 921.
- cleansing of towns and contamination of rivers, 1878, A., 813.
- utilisation of suint from wool, 1879, A., 86.
- wearing of steam boilers, 1879, A., 410.
- iron smelting in the cupola furnace, 1879, A., 564.
- heating steam boilers, 1879, A., 1070.
- apparatus for measuring the heat of combustion, 1880, A., 1.

- Fischer, Ferdinand**, apparatus for estimating oxygen in the atmosphere, 1880, A., 137.
- burning of fuel in house stoves, 1880, A., 145.
- adulteration and examination of food and drink, 1880, A., 422.
- evolution of carbonic oxide from red-hot iron stoves, 1880, A., 592.
- investigation of lubricating oils, 1880, A., 778.
- zinc distillation, 1881, A., 325.
- dephosphorising pig iron, 1881, A., 326.
- dry distillation of wood, 1881, A., 332.
- Fischer, Georg**, new colouring matter from *o*-amidophenol, 1879, A., 924.
- Fischer, Heinrich**, resorcinolsulphonates, 1881, A., 1147.
- Fischer, Leopold Heinrich**, the so-called cat's-eye and fibrous quartz, 1874, 555.
- miscellaneous contributions to microscopical mineralogy, 1881, A., 990.
- Fischer, Otto**, action of chloral and aldehyde on toluene, 1875, 154.
- methylantracene and some of its compounds, 1875, 1021.
- action of nitrous acid on acetanilide, 1876, ii., 205.
- the phthaleins of tertiary aromatic bases, 1877, i., 465; ii., 607.
- salicin of methylaniline, 1877, ii., 605.
- benzoyldimethylaniline, 1877, ii., 606.
- action of nitrous acid on substituted amides, 1877, ii., 607.
- condensation products of aromatic bases, 1878, A., 51; 1879, A., 53; 1880, A., 40, 636; 1881, A., 587; 1882, A., 392, 833.
- condensation products of aldehydes with primary aromatic bases, 1880, A., 39.
- diamidotriphenylmethane, 1880, A., 661.
- nicotinic acid from pyridine, 1882, A., 627.
- Fischer, Otto**, and **Philipp Greiff**, synthesis of leucaniline, 1880, A., 640.
- Fischer, Otto**, and **Ludwig Roser**, amidotriphenylmethane, 1880, A., 661.
- Fischer, Otto**, and **Christian Rudolph**, a new class of colouring matters, 1882, A., 1066.
- Fischer, Otto**, and **Joseph Ziegler**, a new triamidotriphenylmethane, 1880, A., 662.
- Fischer, Otto**. See also **Karl Bedall**, **Emil Fischer**, **Carl Theodor Liebermann**.
- Fischer, Phil.**, bone-glass, 1874, 1115.
- Fischli, Heinrich**, constitution of the dioxybenzenes, 1878, A., 866.
- *p*-toluic and terephthalic acid, 1879, A., 638.
- Fisher, Walter William**, manganese tetrachloride, 1878, T., 409.
- lead tetrachloride, 1879, T., 282.
- Fison, Frederick William**. See **Augustus George Vernon Harcourt**.
- Fittbogen, J.**, manuring potatoes, 1881, A., 305.
- carnallite as manure and fixer of ammonia, 1882, A., 1130.
- Fittbogen, J.**, and **P. Hässelbarth**, carbonic acid in the atmosphere, 1876, ii., 58.
- Fittbogen, J.** (and others), manuring experiments with phosphoric acid in different combinations, 1881, A., 1072.
- Fittbogen, J.** See also **P. Hässelbarth**.
- Fittica, Friedrich Bernhard**, identity of the cymenes from camphor, pychotis oil, and thymol, 1873, 1227; 1875, 59.
- the cymene produced synthetically from *n*-propyl bromide and crystallisable bromotoluene, 1874, 684.
- a fifth oxytoluic acid, 1874, 1166.
- nitrotoluic acids, azotoluic acids, and a new cymenesulphonic acid, 1875, 265.
- azobenzoic and nitrobenzoic acids, 1875, 766.
- nitrobenzoic acids, 1875, 766; 1876, ii., 412; 1877, ii., 483; 1878, A., 980; 1879, A., 150.
- action of ethyl nitrate on benzoic acid in presence of concentrated sulphuric acid, 1876, ii., 411.
- synthesis of nitro-acids, 1877, ii., 483.
- benzonitrobenzoic acid, 1877, ii., 483.
- a nitrobenzaldehyde corresponding to the nitrobenzoic acid melting at 127°, 1878, A., 65.
- the lemon-yellow nitrobenzoic acid, 1878, A., 980.
- a fourth mononitrophenol, 1881, A., 46.
- new nitrophenols, 1881, A., 47; 1882, A., 51.
- Fittig, Rudolph**, *m*-toluic acid, 1873, 276.
- phenanthrene and anthracene, 1873, 750.



- Fittig, Rudolph**, a new hydrocarbon from diphenylene ketone, 1873, 755.  
 — phenylpropyl alcohol, 1873, 899.  
 — quinones, 1874, 263.  
 — the nitrophenol corresponding with dinitrobenzene, 1874, 583.  
 — conversion of diazonitrobenzenes into nitrophenols, 1874, 696.  
 — attempts to effect the synthesis of allylbenzene, 1874, 894.  
 — transformation of benzenedisulphonic acid into terephthalic acid, 1875, 366.  
 — note on the composition of hydrous calcium glycolate, 1875, 444.  
 — the quinone of mesitylene, 1875, 637.  
 — reduction of *p*-bromonitrobenzene, 1875, 643.  
 — on so-called non-saturated compounds, 1876, i., 897; 1877, i., 61; ii., 429.  
 — relation of organic acids to anhydrides, 1876, i., 898.  
 — simple method of preparing glycolic acid, 1877, i., 59.  
 — conversion of citraconic anhydride into xeronic anhydride, 1877, i., 64.  
 — new derivatives of mucic acid, 1877, i., 65.  
 — the acids in Roman chamomile oil, 1877, i., 97.  
 — on the non-saturated acids, 1877, ii., 735.  
 — uric acid formula, 1879, A., 142.  
 — formation of unsaturated hydrocarbons from the addition products of non-saturated acids, 1879, A., 376.  
 — constitution of tiglic and angelic acids, 1879, A., 456.  
 — polymerised non-saturated acids, 1880, A., 120.  
 — new lactones, 1880, A., 799.  
 — isatropic acid, 1881, A., 425.  
 — constitution of lactones, 1882, A., 32.  
 — interpretation of syntheses by Perkin's reaction, 1882, A., 190.  
**Fittig, Rudolph**, and **Felix Binder**, addition products of cinnamic acid, 1879, A., 378.  
**Fittig, Rudolph** and **Julius Bredt**, pyroterebic acid, 1880, A., 315.  
 — lactone of isocaproic acid, 1882, A., 34.  
**Fittig, Rudolph**, and **Ernst Büchner**, decomposition of *p*-bromaniline by heat, 1878, A., 50.  
**Fittig, Rudolph**, and **Fritz Engelhorn**, methacrylic acid, 1880, A., 378.  
**Fittig, Rudolph**, and **Ferd. Gebhard**, fluoranthene, a new coal tar hydrocarbon, 1878, A., 431; 1879, A., 165.  
**Fittig, Rudolph**, and **Carl Geisler**, pyroterebic acid, 1882, A., 41.  
**Fittig, Rudolph**, and **William Francis Hillebrand**, quinic acid, 1877, ii., 488; 1879, A., 159.  
**Fittig, Rudolph**, and **Edvard Immanuel Hjelt**, lactone of *n*-caproic acid, 1882, A., 33.  
**Fittig, Rudolph**, and **Hermann Kast**, atrolactic, phenyllactic and atroglyceric acids, 1881, A., 427.  
**Fittig, Rudolph**, and **Julius Köbig**, constituents of Roman chamomile oil, 1879, A., 454.  
**Fittig, Rudolph**, and **Hermann Kopp**, acids obtained by the saponification of Roman chamomile oil, 1879, A., 454.  
**Fittig, Rudolph**, and **Otto Krafft**, terpenylic acid, teracrylic acid, and heptalactone, 1882, A., 42.  
**Fittig, Rudolph**, and **Paul Krusemark**, citraconic and mesaconic acids, 1881, A., 416.  
**Fittig, Rudolph**, and **Henry Liepmann**, constitution of isodiphenic acid and fluoranthene, 1879, A., 536.  
 — fluoranthene, a new hydrocarbon from coal tar, 1880, A., 400.  
**Fittig, Rudolph**, and **Thomas Macalpine**, etheneprotocatechuic acid, 1873, 1144.  
**Fittig, Rudolph**, and **Ernst Mager**, contributions to the constitution of the aromatic compounds, 1875, 147.  
**Fittig, Rudolph**, and **Alfred Messerschmidt**, allylacetic acid and valerolactone, 1882, A., 35.  
**Fittig, Rudolph**, and **J. Bertram Mielck**, constitution of terebic acid, 1874, 888.  
**Fittig, Rudolph**, and **Wilhelm Hildebrand Mielck**, constitution of piperic acid, 1874, 897.  
**Fittig, Rudolph**, and **Eugen Ostermayer**, phenanthrene a new hydrocarbon from coal tar, 1873, 176, 892.  
**Fittig, Rudolph**, and **Alexander Pagenstecher**, angelic and tiglic acids, 1879, A., 455.  
**Fittig, Rudolph**, and **Camille Petri**, fumaric and maleic acids, 1879, A., 372.  
**Fittig, Rudolph**, and **Eduard Posen**, amidohydrocinnamic acid (*phenylamidopropionic acid*), 1879, A., 378.  
 — phenyllactimide, 1880, A., 322.  
**Fittig, Rudolph**, and **William Ramsay**, new mode of forming *o*-toluic acid, 1874, 68.



- Fittig, Rudolph**, and **Ira Remsen**, synthesis of piperonylic acid, and a new method of forming the aldehyde of protocatechuic acid, 1873, 1143.
- Fittig, Rudolph**, and **Hermann Schmidt**, preparation of glyceryl triacetate, 1880, A., 312.
- Fittig, Rudolph**, and **Alexander Schmitz**, diphenylenemethane, 1879, A., 164.
- Fittig, Rudolph**, and **Wilhelm Siepermann**, quinones, 1876, i., 918.
- Fittig, Rudolph**, and **George C. Thomson**, decomposition of the substitution products of the lower fatty acids by water, 1880, A., 379.
- Fittig, Rudolph**, and **Ludwig Wolff**, method of preparation and constitution of valerolactone, 1882, A., 35.
- Fittig, Rudolph**, and **Casimir Wurster**, atropic and isatropic acids, 1879, A., 379.
- Fittig, Rudolph** (and others), unsaturated monobasic acids with six atoms of carbon, 1880, A., 375.
- Fittig, Rudolph**. See also **Emil Kachel**.
- Fitz, Albert**, alcoholic fermentation by means of *Mucor Mucedo*, 1873, 650.
- on alcoholic fermentation produced by *Mucor ramosus*, 1876, i., 739.
- alcoholic fermentation, 1877, i., 226.
- schizomyeetic fermentations, 1877, i., 226; ii., 214; 1878, A., 241; 1879, A., 664; 1880, A., 819; 1882, A., 1121.
- fungoid fermentation, 1879, A., 172.
- double salts of the lower members of the acetic acid series, 1880, A., 799; 1881, A., 797.
- fermentation of *n*-valeric acid, 1881, A., 798.
- Fitzgerald-Minarelli, A. von**, thermoelectric behaviour of metals, 1876, i., 866.
- Flahault, Ch.**, formation of chlorophyll in the dark, 1880, A., 910.
- Flavard**, apparatus for the estimation of nitrogen in organic compounds, 1881, A., 192.
- Flavard**. See also **Raphael Lépine**.
- Flawitzky, Flavian M.**, secondary amyl alcohol, 1873, 45.
- conversion of amylene into amyl alcohol by sulphuric acid, 1873, 369.
- action of aluminium on zinc chloride, 1873, 848.
- amylene, 1873, 1013.
- isomeric amylenes, 1874, 138.
- specific heat of gases, 1874, 219.
- action of caustic potash on *iso*-amyl iodide, 1874, 241.
- Flawitzky, Flavian M.**, preparation of *isopropyl* alcohol, 1875, 626.
- isomerism of the amylenes from fermentation amyl alcohol, 1876, i., 545.
- constitution of amylene, 1877, ii., 286.
- structure of the isomeric amylenes, 1877, ii., 420.
- oxidation of the amyl glycol  $(\text{CH}_3)_2\text{C}(\text{OH})\text{CH}(\text{OH})\text{CH}_3$ , 1878, A., 564.
- propyl glycol, 1878, A., 965.
- amyl compounds, 1879, A., 37.
- dehydration of propylene glycol, 1879, A., 136.
- structure of terpenes, 1879, A., 167.
- *d*-terpene from the turpentine of *Pinus sylvestris*, 1879, A., 168.
- hydration of terpenes, 1879, A., 726; 1880, A., 264.
- changes produced by hydration and dehydration in the *l*-terpene from French turpentine oil, 1880, A., 402.
- *l*-terebenthene from French turpentine oil, 1880, A., 559.
- specific heat of gases and vapours, 1881, A., 310.
- commercial lemon oil, 1881, A., 437.
- the terebenthenes, 1881, A., 437.
- Flawitzky, Flavian M.**, and **Paul Kriloff**, valerylene from *isobutyl*carbinol, 1878, A., 20.
- oxidation of the valerylene,  $(\text{CH}_3)_2\text{CH}.\text{C}\equiv\text{CH}$ , 1878, A., 562.
- *isopropyl*acetylene, 1879, A., 134.
- Flechner, R.**, new process for extracting copper from copper pyrites, 1882, A., 904.
- Fleck, El.**, manufacture of artificial mother-of-pearl and of imitations of marble from glue, 1879, A., 996.
- Fleck, Hugo**, arsenic in the air of rooms, 1873, 421.
- constitution of the water of the Dead Sea, 1882, A., 24.
- estimation of red lead, 1882, A., 99.
- Fleischer, Anton**, on some double sulphocyanates, 1876, i., 910.
- cyanic acid compounds, 1876, ii., 73.
- formation of azo-compounds, 1876, ii., 415.
- on the sulphuric acid springs of the Büdöberg, and on the Büdös cavern, 1876, ii., 494.

- Fleischer, Anton**, structure of cyanic acid compounds, 1876, ii., 509.
- Fleischer, Anton**, and **Wilhelm Hankó**, distillation products of xanthates, 1878, A., 29.
- Fleischer, Anton**, and **August Friedrich Kekulé**, oxyymene from camphor, 1873, 1228.
- Fleischer, Anton**, and **Georg Nemes**, action of nitric acid on earbanilide, 1877, ii., 886.
- Fleischer, Anton**. See also **Wilhelm Hankó**, **August Friedrich Kekulé**.
- Fleischer, Emil**, action of magnesium carbonate on calcium sulphate in presence of common salt, 1873, 475.
- volumetric estimation of sulphuric acid, 1873, 529.
- on the behaviour of alum towards the chromates of potassium and barium; and the reason why a chromic acid alum cannot be formed, 1873, 1005.
- baryta-green as a pigment, 1874, 1116.
- estimation of tartaric and citric acids, 1874, 1181.
- on the behaviour of sparingly soluble lead salts to ammonium acetate, with some theoretical views relating to double salts, 1876, i., 190.
- citric acid, 1877, i., 591.
- Fleischer, Hermann Anton Moritz**, experiments on the feeding of sheep, 1874, 384.
- influence of the seed on the tannin of oak-bark, 1880, A., 920.
- injurious effect of kainite and superphosphate on the germination of potatoes, 1881, A., 300.
- manure, 1881, A., 640.
- insoluble phosphate estimation, 1881, A., 645.
- Fleischer, Richard**, influence of alcohol, beer and wine on digestion, 1881, A., 752.
- Fleischl von Marxow, Ernst**, modification of the method for the detection of bile pigments, 1876, ii., 117.
- Fleischmann, Wilhelm**, contributions to the physics of milk, 1875, 278.
- influence of fodder on the secretion of milk, 1880, A., 907.
- Fleischmann, Wilhelm**, and **Rudolf Sachtleben**, creaming milk according to Becker's method, 1882, A., 674.
- Fleischmann, Wilhelm**, and **Paul Vieth**, milk secretion and the amount of fat in milk, 1880, A., 330, 487.
- Fleischmann, Wilhelm**, and **Paul Vieth**, quantity and quality of milk yielded by different races of cows, 1881, A., 630.
- Fleischmann, Wilhelm** (and others), composition, properties and analysis of milk, 1882, A., 662.
- Fleissner, Franz**, tribenzylphosphine oxide, 1881, A., 263.
- Fleitmann, Theodor**, preparation of malleable nickel and cobalt and the application of these metals, 1879, A., 563.
- Flekkel**, extraction of potash from suint of Russian wool, 1881, A., 475.
- Fleming, John Ambrose**, the new contact theory of the galvanic cell, 1875, 120.
- polarisation of electrodes in water free from air, 1877, i., 266.
- Flemming, Hugo**, recovering glycerol from spent soap leys, 1882, A., 782.
- Flesch, A. P.**, sulphur derivatives of cymene, 1873, 1029.
- Fletcher, Frederick William**, citrate of iron and quinine, 1880, A., 68.
- Fletcher, Joseph**, preparation of sulphuretted hydrogen, 1879, A., 1013.
- water of the River Vartry, 1880, A., 21.
- examination of some County Dublin waters, 1880, A., 766.
- Fletcher, Thomas William**, gas apparatus for heating in laboratories, 1873, 540.
- on a simple gas regulator, 1876, i., 488.
- Fleury, Gustave Clément**, thermic effects which accompany the inversion of sugar, 1875, 1250; 1876, i., 183.
- sodium arsenate, 1876, i., 45; 1881, A., 141.
- examination of white agaric (*Polyporus officinalis*), 1876, i., 431.
- influence of acids and salts on the inversion of cane sugar, 1876, ii., 397; 1877, i., 451.
- contributions to volumetric analysis, 1878, A., 91.
- Fliche, P.**, and **Louis Grandeau**, influence of the chemical composition of the soil on the growth of *Pinus Pinaster*, 1874, 382.
- influence of the chemical composition of the soil on the growth of the chestnut, 1875, 97.
- composition of leaves, 1877, i., 334.
- chemical examination of ligneous Papilionaceæ, 1880, A., 735.
- Flight, Walter**, examination of methods for effecting the quantitative separation of iron sesquioxide, alumina, and phosphoric acid, 1875, 592.

- Flight, Walter**, analyses of two new amalgams and of a specimen of native gold, 1880, A., 707.
- contributions to our knowledge of the composition of alloys and metal-work, for the most part ancient, 1882, T., 134.
  - on the action of sodium hydrate and carbonate on feldspars and wollastonite, 1882, T., 159.
- Flight, Walter**. See also *Nevil Story Maskelyne*.
- Flint, John Henry**, analysis of *Areto-staphylos glauca*, 1874, 598.
- Flögl, Gregor**. See *Johann Oser*.
- Flourens, Gustave**, crystallization of sugar, 1876, ii., 679.
- changes which sugar undergoes in crystallizing, 1882, A., 122.
- Flowers, Hiland**, lactucarium, 1879, A., 1041.
- Floyd, F. P.**, chemical character of the pigment of the negro skin, 1877, i., 329.
- Flückiger, Friedrich August**, on the hydrocyanides of the alkaloids, 1873, 497.
- the bitter apple as an article of food, 1873, 649.
  - detection of curarine, 1873, 654.
  - buchu leaves, 1874, 494.
  - crystallized digitalin, 1874, 701.
  - on a substance called myristicin, 1875, 91.
  - note on Procter's reaction for gallic acid, 1875, 105.
  - examination of some specimens of opium, 1876, i., 115.
  - king of the Bombay market, the so-called nauseous asafetida, 1876, i., 431.
  - a new test for brucine, 1876, i., 443.
  - decomposition of white precipitate, 1876, i., 522.
  - solubility of bitter almond oil, 1876, i., 611.
  - urn resin, 1876, i., 614.
  - beech wax, 1876, i., 615.
  - detection of free mineral acids by means of colchicine, 1876, ii., 324.
  - carvol, 1876, ii., 643.
  - oil of iris root, 1876, ii., 644.
  - note on dikamali resin, 1877, ii., 501.
  - note on the saponin of sarsaparilla, 1878, A., 327.
  - an indifferent crystalline resin from gurjun balsam, 1878, A., 439.
  - quinine, 1878, A., 588.
  - effect of cold on cherry laurel, 1880, A., 733.
- Flückiger, Friedrich August**, testing mustard oil, 1881, A., 125.
- Cananga oil, 1881, A., 916.
  - testing Peru balsam, 1881, A., 947.
  - essential oil of *Pistacia Lentiscus*, 1882, A., 208.
- Flückiger, Friedrich August**, and *Eugen Buri*, kosin, 1875, 468.
- Flügge, C.**, chemical changes in the liver, 1878, A., 160.
- Fluegger, Theo.**, spitting of silver, 1879, A., 438.
- Fodor, J. von**, gases in the soil, 1876, ii., 57.
- Föhr, Carl Friedrich**, phonolite, 1882, A., 587.
- Förster, Karl Friedrich Max**, ethyl derivatives of *o*-amidophenetol and *o*-amidophenol, 1880, A., 463.
- presence of furfural in fermented liquids, 1882, A., 710.
  - cause of Jorissen's reaction for fusel oil, 1882, A., 1002.
- Förster, P.**, colouring matters from Chinese yellow berries, capers, and rue, 1882, A., 976.
- Förstner, H.**, the sodium feldspar of Pantellaria, 1878, A., 388.
- cossyrite from Pantellaria, 1882, A., 152.
  - artificial würtzite, 1882, A., 281.
- Fokker, Abraham Pieter**, presence of dissolved earths and phosphoric acid in alkaline blood, 1873, 925.
- new method for the estimation of uric acid, 1875, 1293.
- Fol, F.**, testing of dye-stuffs, 1875, 193.
- Folkard, Charles Watson**, crystallized double sulphate of calcium and sodium, 1881, A., 509.
- Follenius, O.**, titration of ferrous chloride with potassium permanganate, 1873, 531.
- quantitative determination of small quantities of uranium, 1873, 531.
  - on the methods of estimating cadmium, 1875, 481, 780.
- Fontenay, Henri de**, Egyptian blue, 1874, 833.
- Foote, Albert E.**, modification of the Jagn vacuum or filter pump, 1874, 950.
- Forbes, David**, production of spiegel-eisen, 1873, 202.
- obituary notice of, 1877, i., 496.
- Forbes, George**. See *James Young*.
- Forcrand, Robert de**, organic ultramarines, 1879, A., 329, 622.
- formation of glycocine from ethyl nitrate, 1879, A., 621.

- Forcrand, Robert de**, ethyl nitracetate, 1880, A., 32.  
 — hydrate of methyl iodide, 1881, A., 32.  
 — hydrate of hydrogen sulphide, 1882, A., 1027.
- Forcrand, Robert de**, and **Ballin**, production of ultramarines of different metals, 1878, A., 935.
- Fordos, Mathurin Joseph**, action of air and water upon lead, 1874, 232.  
 — action of water from the Seine and the Ourcq upon lead, 1874, 232.  
 — action of potable waters on lead, 1874, 872.  
 — action of alimentary and medicinal liquids on vessels made of tin containing lead, 1875, 108.  
 — detection of lead in tin, 1875, 665.  
 — detection of fuchsine in wines, 1877, i., 750.
- Forquignon, L.**, malleable cast iron, 1881, A., 766; 1882, A., 116.
- Forquignon, L.**, and **A. Leclerc**, simple arrangement for the employment of gas as a means of obtaining high temperatures, 1873, 471.
- Forrer, Carl**. See **Robert Gnehm**.
- Forssman, L. A.**, the electrical resistance of selenium, 1878, A., 360.
- Forst, Carl**, on the preparation of stilbene and the accompanying by-products, 1876, i., 393.
- Forst, Carl**, and **Christian Böhringer**, cinchotine, 1881, A., 620.  
 — cinchotine and hydrocinchonidine, 1881, A., 830.  
 — hydroquinidine (*hydroconquinine*), 1882, A., 74, 1306.  
 — occurrence and behaviour of cinchotine, hydrocinchonidine, and hydroquinidine, 1882, A., 982.  
 — quitenidine, 1882, A., 1307.
- Forst, Carl**, and **Ernst Carl Theodor Zincke**, hydrobenzoin group, 1875, 453, 1190; 1876, ii., 634.
- Forster, Carl**, mercuriophenylammonium chloride, 1874, 698.  
 — conversion of substituted ureas into guanidines, 1875, 465.
- Forster, Friedrich**. See **Victor Meyer**.
- Forster, Josef**, experiments on the importance of the inorganic constituents of food, 1874, 592.  
 — contributions to the theory of the decomposition of albumin in the animal body, 1876, ii., 211.  
 — composition of the air in the soil and in dwelling houses, 1876, ii., 213.  
 — formation of glycogen in the bodies of animals, 1877, ii., 204.
- Forster, Josef**, on the situation of the deposit of fat in animals on different diets, 1877, ii., 791.  
 — loss of lime in the body especially in the bones on an insufficient supply of lime, 1877, ii., 792.  
 — composition of human milk, 1881, A., 630.
- Forster, Josef**. See also **Carl von Voit**.
- Forster, R.**, new method of printing with artificial alizarin, 1876, ii., 231.
- Fossek, Wilhelm**, condensation products of isobutaldehyde, 1882, A., 161, 1278.
- Foster, Clement le Neve**, locality and mode of occurrence of andrewsite, 1876, i., 531.
- Foster, Peter le Neve**, testing of yellow glass for the dark room of photographers, 1873, 948.
- Foster, William**, the action of alkaline hypobromite on ammonium salts, urea, and oxamide. Part I., 1878, T., 470.  
 — the action of alkaline hypobromite on oxamide, urea, and potassium ferrocyanide. Part II., 1879, T., 119.
- Foullon, (Baron) Heinrich von**, crystallogenic observations, 1882, A., 574.  
 — on crystallised tin, 1882, A., 576.
- Fouqué, F.**, general results of the analysis of the geysers on the island of San Miguel (Azores), 1873, 1012.  
 — lava from Vesuvius, 1875, 241.  
 — saline deposits in the lava of the last eruption of Santorin (Grecian Archipelago), 1875, 623.  
 — wollastonite nodules, fassaite pyroxene, and melanite garnet, from Santorin lava, 1875, 624.  
 — the lavas of Thera, 1876, ii., 392.  
 — hypersthene from the pumice of Santorin, 1881, A., 388.  
 — Santorin and its eruptions, 1881, A., 555.
- Fouqué, F.**, and **Auguste Michel-Lévy**, production of felspars by fusion, and by prolonged maintenance at a temperature near that of fusion, 1879, A., 358.  
 — artificial production of a leucitophyr identical with the crystalline lavas of Vesuvius and Somma: incipient crystalline forms of leucite and nepheline, 1880, A., 448.  
 — artificial production of felspars containing barium, strontium, and lead, 1880, A., 449.  
 — artificial production of ophitic structure, 1881, A., 697.  
 — synthesis of meteorites, 1882, A., 292.



- Fox, A. C.**, insoluble gum for envelopes, &c., 1878, A., 923.
- Fraas, Oscar Friedr.**, vivianite as a petrifying medium, 1878, A., 711.
- Fraenkel, Albert**, relation of oxygen to the tissues and the splitting up of albumin, 1876, i., 948.
- Fraenkel, Albert**, and **Franz Röhmman**, phosphorus poisoning in hens, 1882, A., 544.
- Franchimont, Antoine Paul Nicolas**, heptylic acid from the hexyl alcohol of heracleum oil, 1873, 55.
- dibenzylidicarbonic acid, 1873, 390.
- action of phosphorus pentachloride on sodium ethylate, 1874, 565.
- preparation of malonic acid, 1874, 568; 1875, 355.
- citric anhydride, 1874, 569.
- freezing point of ether, 1877, ii., 425.
- derivatives of dextrose and levulose, 1877, ii., 583.
- zinc acetate, 1879, A., 452.
- preparation of ethereal acetates, 1880, A., 104.
- glucose, 1880, A., 158.
- cellulose, 1880, A., 159.
- tunicin, 1880, A., 233.
- acetic derivatives of cellulose, 1881, A., 709.
- action of sulphuric acid on acetic anhydride, 1881, A., 716.
- Franchimont, Antoine Paul Nicolas**, and **Johann Conrad Ludwig Sicherer**, the colouring matter of sandal and calliatur woods, 1879, A., 470.
- Franchimont, Antoine Paul Nicolas**, and **Leonard Willem Theodor Wigman**, lactucene, 1879, A., 468.
- betulin, 1879, A., 469.
- Franchimont, Antoine Paul Nicolas**. See also **August Friedrich Kekulé**.
- Francis, Edward**, composition of boiler incrustations, 1877, ii., 813.
- Francis, Ernest E. H.**, prussic acid from cassava, 1877, ii., 515.
- Francis, George**, a poisonous Australian lake, 1878, A., 907.
- Francken, V.**, report on the processes of Classen and v. Reis for the determination and separation of metals by electrolysis, 1882, A., 1320.
- Franco, Diego**, the carbonic acid of Vesuvius, 1874, 137.
- François de Chaumont, Francis Stephen Bénet**, experiments with animal charcoal, silicated carbon, and spongy iron filters, 1879, A., 986.
- Frank, Adolph**, cultivation of moorlands, 1875, 1279.
- Frank, Eugen**, synthesis of glyceric acid from monochlorolactic acid, 1881, A., 416.
- Frankland, Edward**, on some points in the analysis of potable waters, 1876, i., 825.
- organo-boron compounds, 1876, ii., 618.
- on the spontaneous oxidation of organic matter in water, 1880, T., 517.
- on the action of organo-zinc compounds upon nitriles and their analogues, 1880, T., 560.
- dry fog, 1880, A., 439.
- Frankland, Edward**, and **Leonard Dobbin**, constitution of the olefine produced by the action of zinc upon ethylic iodide, 1878, T., 545.
- Frankland, Edward**, and **John Castell Evans**, on the action of zinc ethyl on benzonitrile, 1880, T., 563.
- Frankland, Edward**, and **Christopher Colborne Graham**, on a new method of preparing dinifroethylic acid, 1880, T., 570.
- on the action of organo-zinc compounds upon nitriles and their analogues (*second notice*), 1880, T., 740.
- Frankland, Edward**, and **Henry Aubrey Lawrence**, on stannic ethide, 1879, T., 130.
- on plumbic tetrathide, 1879, T., 244.
- Frankland, Edward**, and **David Alexander Louis**, action of zinc ethyl on azobenzene, 1880, T., 560.
- action of zinc ethyl on benzoyle cyanide, 1880, T., 742.
- Frankland, Edward**, and **Leonard Temple Thorne**, luminosity of benzol when burnt with non-luminous combustible gases, 1878, T., 89.
- Frankland, Edward**, and **Harry Kneebone Tompkins**, action of zinc ethyl on phenylacetonitrile, 1880, T., 566.
- Frankland, Edward**. See also (*Miss*) **Lucey Halcrow**.
- Frankland, Percy Faraday**, on the action of diazonaphthalene upon salicylic acid, 1880, T., 746.
- Frantz**, use of palladium instead of silver in electro-deposition, 1877, ii., 239.
- Frantzius, Alexander von**, the warm springs of Costa Rica, 1874, 36.
- Franz, A.**, coffee adulteration, 1875, 388.
- testing roasted coffee for chicory, 1877, i., 752.



- Fraude, Georg**, aspidospermine, 1879, A., 470; 1880, A., 54.  
 — *o-cresolphthalein*, 1879, A., 634.  
 — perchloric acid as a test for alkaloids, 1880, A., 69.  
 — test for quebracho bark, 1881, A., 473.  
 — resorcintartrein and resorcineitrein, 1882, A., 399.
- Frébault, Aristide**, the reactions of acids with oil of peppermint, and their bearing on the formation of chlorophyll, 1874, 1172.  
 — action of iodine on carminic acid and on hæmatin, 1877, i., 347.
- Frébault, Aristide**, and **Jean Alphonse Destrem**, action of neutral sodium phosphate on insoluble carbonates, 1878, A., 113.
- Freda, Giovanni**, antimonious acid a Vesuvian product, 1881, A., 518.
- Freda, Pasquale**, researches on the nature of the tannin of gall-nuts, and on a crystalline substance formed by the action of arsenic acid on gallic acid, 1878, A., 672.  
 — preparation of digallic acid, 1879, A., 645.  
 — artificial tannin, 1880, A., 122.
- Fredericq, Léon**, distribution of the carbonic anhydride contained in blood between the serum and the corpuscles, 1877, ii., 909.  
 — hæmocyanin from the blood of the *Octopus vulgaris*, 1879, A., 333.  
 — rotatory power of the albuminoid substances in blood serum and their estimation by this means, 1882, A., 75, 110.
- Frederking, C. H. W.**, testing of quinine hydrochloride for morphine, 1874, 1105.
- Freire, D.**, estimation of oxygen in urine, 1876, i., 115.
- Freire-Marreco, Algernon**, obituary notice of, 1882, T., 238.
- Fremy, Edmond**, generation of ferments, 1873, 82.  
 — observations on Pasteur's paper "Theory of True Fermentations," 1873, 83.  
 — on fermentation, 1873, 294.  
 — refining of glass, 1876, i., 787.  
 — a new oxide of manganese, 1876, ii., 47.  
 — salts formed by manganese dioxide, 1877, i., 52.  
 — general method of analysis of vegetable tissues, 1877, i., 229.  
 — chlorophyll, 1877, ii., 629.
- Fremy, Edmond**, sulphuric saponification, 1878, A., 922.  
 — artificial formation of coal, 1879, A., 896.
- Fremy, Edmond**, and **L. Clémandot**, irisation of glass, 1877, i., 687.
- Fremy, Edmond**, and **Pierre Paul Dehérain**, on sugar beet, 1875, 906; 1876, i., 955.
- Fremy, Edmond**, and **Ch. Feil**, production of artificial corundum, ruby, and different crystallised silicates, 1878, A., 203.
- Fremy, Edmond**, and **Victor Urbain**, chemical studies on the vegetable skeleton, 1882, A., 420.  
 — — — vasculose, 1882, A., 708.
- Fremy, L.**, intracellular generation of the alcoholic ferments, 1876, ii., 542.
- French, A.**, lead fume and a new process of fume condensing, 1880, A., 146.
- Frenzel, August**, lithiophorite, 1873, 149.  
 — pucherite, 1873, 253.  
 — bismuthoferrite, 1873, 478.  
 — arsenic glance, 1873, 850.  
 — copper arsenide, 1873, 850.  
 — beraunite, 1873, 851.  
 — mineral analyses—1. marcasite. 2. picroparmacolite. 3. iron sinter or pitticite. 4. brittle silver ore or stephanite. 5. kersolite and limbachite. 6. kornite. 7. erlanite. 8. nephrite. 9. eulytine and agricolite. 10. gilbertite. 11. milarite. 12. telluric bismuth. 13. cupreous manganese. 14. bismutite. 15. tin, 1874, 445.  
 — mineralogical analyses—1. miriquidite. 2. minerals accompanying the brown hæmatite of Langenstrieß. 3. neolite. 4. arsenic glance. 5. selenious bismuth glance. 6. cosalite and rezbanyite. 7. caberite. 8. iron platinum. 9. famatinite. 10. specular iron ore. 11. bismutite, 1874, 1140.  
 — wappelerite, a new calcium arsenate, 1875, 738.  
 — mineral analyses—1. descloizite and vanadinite. 2. linarite. 3. goslarite. 4. löllingite. 5. spiauterite. 6. famatinite. 7. artificial copper glance and pucherite. 8. zöblitzite. 9. quartz. 10. calcite. 11. magnetite. 12. minerals accompanying the brown iron ore of Langenstrieß; anglesite; hydrated ferric sulphate; bismuth selenide; frenzelite, 1876, i., 49.  
 — mineralogical notes from the East Indian Archipelago, 1878, A., 708.

- Frenzel, August**, mineralogical notes from the Caucasians, 1880, A., 615.
- mineral analyses—1. vanadinite and tritochlorite. 2. minerals from Albergaria Velha, in Portugal. 3. picrosmine. 4. topaz, gilbertite, potassium-mica. 5. mealy quartz. 6. lautite, 1882, A., 472.
- Frerichs, Ernst**. See *Rudolph Eduard Kütz*.
- Frerichs, Friedrich Theodor**, thiohydrobenzoic, dithiobenzoic, and bromothiohydrobenzoic acids, 1874, 990.
- lanthanum and didymium, 1874, 1062; 1878, A., 934.
- a new method of analysing carbon compounds, 1877, ii., 509.
- new laboratory apparatus, 1877, ii., 838.
- Frerichs, Friedrich Theodor**, and **Edgar Francis Smith**, compounds of didymium and lanthanum, 1878, A., 647.
- Fresenius, Carl Remigius**, gravimetric estimation of manganese, 1873, 408, 944.
- analysis of four mineral waters of Bad Ems, 1873, 484.
- analysis of the Stahlbrunnen at Homburg, 1873, 742.
- analysis of the Carlsquelle at Bad Helmstedt, 1873, 1213.
- analysis of nickel and cobalt ores, speiss, and other metallurgic products; an easy and accurate method of separating zinc from nickel and cobalt, 1873, 1261.
- how to avoid explosions with hydrogen generators, 1874, 538.
- estimation of sulphur in pig iron, steel, etc., 1874, 919.
- quick method of analysing pyro-lignite and acetate of lead, 1874, 921.
- chemical investigation of the warm mineral spring in the bath-house of the Royal William Medical Establishment at Wiesbaden, 1874, 963.
- detection of nitrous acid in dilute solutions, 1874, 1178.
- analysis of nickel and cobalt ores, 1874, 1180.
- the analysis of pyrolignite of lime, 1875, 104.
- analysis of the Deutsch-Kreutzer Sauerbrunnen (a Hungarian mineral water), 1875, 243.
- analysis of the water from the Grindbrunnen at Frankfort-on-the-Maine, 1876, i., 537.
- testing for nitric acid in natural waters and other very dilute solutions thereof, 1876, ii., 544.
- Fresenius, Carl Remigius**, method for the analysis of alkaline mineral waters, 1876, ii., 544.
- analysis of sulphuretted waters, 1876, ii., 549.
- analysis of the saltpetre used for the manufacture of gunpowder, 1876, ii., 651.
- determination of potassium as platinochloride in presence of the chlorides of the metals of the alkaline earths, 1877, ii., 220.
- method of estimating copper and sulphur in cupreous iron pyrites and in the burnt ore before and after lixiviation, 1877, ii., 650; 1878, A., 529.
- analysis of the water of the warm spring at Assmannshausen, 1878, A., 209.
- chemical examination of the warm wells of Schlangenbad, 1878, A., 715.
- alkaline constituents of the Hunyadi János springs at Buda-Pesth, 1879, A., 366.
- estimation of the available zinc in zinc dust, 1879, A., 400.
- analysis of the Oberbrunnen springs at Salzbrunn in Silesia, 1882, A., 1178.
- estimation of potassium as platinochloride, 1882, A., 1231.
- determination of impurities in metallic copper, 1882, A., 1232.
- Fresenius, Carl Remigius**, and **Eduard Luck**, analysis of commercial amorphous phosphorus, 1873, 89.
- Fresenius, Heinrich**, specific gravity of potatoes, 1881, A., 932.
- solubility of cadmium sulphide in ammonium sulphide, 1881, A., 941.
- Fresenius, Heinrich**, and **Franz Bergmann**, electrolytic estimation of silver, 1880, A., 747.
- electrolytic estimation of nickel and cobalt, 1880, A., 751.
- Fresenius, Theodor Wilhelm**, phillipsite and its relations to harmotome and desmin, 1881, A., 695.
- Fresenius-Babo's test for arsenic, 1882, A., 555.
- Freund, August**, preparation of propionic acid from lactic acid, 1873, 54.
- apparent occurrence of trimethylcarbinol as a product of alcoholic fermentation, 1876, i., 543.
- trimethylene, 1882, A., 154, 1273.
- trimethylene alcohol from glycerol, 1882, A., 156.
- Freund, Carl**, some galvanic properties of aqueous solutions of metallic salts, 1879, A., 863.

- Frey, E.**, preparation of earth metals, 1877, i., 689.
- Frey, J. H.**, absorptive power of soils, 1875, 1279.
- Freyberg, Ernst**, plant respiration, 1879, A., 736.
- respiration power of marsh and water plants, 1880, A., 335.
- Freytag, Bruno**, some derivatives of propionic acid, 1880, A., 312.
- Freytag, Moritz**, influence of the smoke from Freiberg works on the neighbouring vegetation and on the health of domestic animals, 1873, 1155.
- harmful constituents of furnace gases and their removal, 1882, A., 1333.
- Fricke, Albert**, soap and washing, 1874, 397.
- Fricke, Emil Albert**. See **Hans Hübner**.
- Frickhinger, Hermann**, dysodil in the Ries district, 1876, i., 194.
- estimation of starch in sausages, 1880, A., 826.
- Friedburg, L. H.**, on carbon disulphide, 1876, i., 679.
- mill waste for manure, 1880, A., 60.
- Friedel, Charles**, on a natural compound of ferric and cuprous oxides, and the artificial production of atacamite, 1873, 1107.
- titanium compounds, 1874, 1065; 1876, i., 190.
- the isomeric compounds  $C_2H_4BrI$ , 1874, 1150.
- molecular combinations, 1875, 1234.
- on a combination of methyl oxide and hydrochloric acid, 1875, 1245.
- certain alterations of agates and flints, 1876, i., 526.
- the residue in the preparation of chloral, 1876, ii., 66.
- monochloromethyl oxide, 1877, ii., 424.
- new general method for the synthesis of hydrocarbons, ketones, etc., 1877, ii., 864.
- crystalline form of guejarite, 1881, A., 517.
- Friedel, Charles, and Max Balsohn**, limited oxidation of ethylbenzene, 1880, A., 469.
- conversion of bromostyrolene into methyl phenyl ketone, 1880, A., 469.
- action of bromine on diphenylmethane, 1880, A., 558.
- action of ethylene bromide on toluene in presence of aluminium chloride, 1881, A., 259.
- Friedel, Charles, and Max Balsohn**, oxidation of triethylbenzene, 1881, A., 260.
- synthesis of diphenylacetic acid, 1881, A., 273.
- action of ammonia on monobromodiphenylmethane, 1881, A., 279.
- action of sulphuric acid on phenylacetylene, 1881, A., 279.
- Friedel, Charles, and James Mason Crafts**, a new general synthetical method of producing hydrocarbons, etc., 1877, ii., 725.
- direct union of oxygen and sulphur with benzene and toluene, 1878, A., 670.
- synthesis of benzoic, benzene-sulphonic, and benzoylbenzoic acids, 1878, A., 792.
- synthesis of hexamethylbenzene and of mellitic acid, 1881, A., 40.
- compounds of phthalic anhydride with hydrocarbons of the benzene series, 1881, A., 731.
- on some decompositions produced by the action of chloride of aluminium, 1882, T., 115.
- preparation of triphenylmethane, 1882, A., 621.
- Friedel, Charles, and Jules Guérin**, titanium compounds, 1876, ii., 46; 1877, i., 168.
- Friedel, Charles, and Albert Ladenburg**, silico-acetic anhydride, 1873, 52.
- a silicic mercaptan and a silicic chlorobromide, 1873, 53.
- silicon ethyl series, 1880, A., 608.
- Friedel, Charles, and Edmond Sarasin**, crystalline phosphate and arsenate of copper, 1877, i., 690.
- artificial production of crystallized quartz, 1881, A., 346.
- artificial libethenite, 1881, A., 367.
- artificial production of a felspathic substance, 1881, A., 383.
- artificial orthoclase produced in the wet way, 1882, A., 478.
- Friedel, Charles, and Roberto Duarte da Silva**, a new tertiary alcohol and a new method of preparing tertiary alcohols, 1873, 485.
- production of methyl alcohol by the distillation of calcium formate, 1873, 1118.
- formation of glycerin from propylene, 1873, 1119.
- pivalic acid, a new isomeride of valeric acid, 1873, 1126.

- Friedel, Charles, James Mason Crafts,** and **Emil Ador**, synthesis of benzoic acid and benzophenone by the aid of carbonyl chloride, 1878, A., 69, 317.  
 ———— **durene derivatives** (*α-tetramethylbenzene*), 1879, A., 713.
- Friederici, Theod.**, action of hydrogen on *m*-nitro-*p*-trichloracetotoluide and *m*-nitro-*p*-valeryltoluide, 1879, A., 311.  
 ———— new method of preparing chrysanic acid, 1879, A., 324.
- Friedländer, Carl**, and **Erwin Herter**, action of carbonic acid on the animal organism, 1879, A., 174.
- Friedländer, Louis.** See **Ferdinand Tiemann**.
- Friedländer, Paul**, a new acid from phenanthrenequinone, 1877, ii., 492.  
 ———— nitration of *p*-nitrocinnamic acid, 1882, A., 401.
- Friedländer, Paul**, and **Robert Henriques**, *o*-nitrobenzaldehyde, 1882, A., 840.
- Friedländer, Paul**, and **Hermann Ostermaier**, carbostyryl, 1882, A., 201, 732.
- Friedländer, Paul**, and **Arthur Weinberg**, carbostyryl, 1882, A., 1209.
- Friedländer, Paul.** See also **Adolf von Baeyer**.
- Friedlaender, Siegfried**, and **Max Schmoeger**, comparison of the Holstein and Swarts' creaming process, 1882, A., 1148.
- Friedrich, Arthur Richard**, dichloraldehyde hydrate, 1881, A., 407.  
 ———— dry distillation of potassium dichloracetate, 1881, A., 408.  
 ———— action of potash on bromomethacrylic acid, 1881, A., 413.  
 ———— decomposition of monohalogen substituted crotonic acids by alkalis, 1882, A., 945.
- Friese, Georg**, quinoline tartrate and salicylate, 1882, A., 868.
- Friese, Georg.** See also **Heinrich August Bernthsen**.
- Friese, Paul**, mixed azo-compounds, 1876, i., 85.
- Friswell, Richard John**, and **Alfred John Greenaway**, note on thallous platinocyanide, 1877, ii., 251.
- Fritzsche, Paul**, phenoxyacetic acid, 1879, A., 322; 1880, A., 318.
- Frölich, Oscar.** See **Anton Geuther**.
- Fromme, Carl**, electromotive power of galvanic combinations consisting of zinc, sulphuric acid, and platinum, with copper, gold, and carbon, 1881, A., 490.
- Frommel, Jules.** See **Philippe Henri Arnout de Clermont**.
- Frommüller, Carl**, thallium cyanide, 1874, 147.  
 ———— double salts of thallous cyanide and a new thallium cyanide, 1878, A., 395.
- Frommüller, Carl.** See also **Georg Ludwig Carius**.
- Froté, Ch.**, benzyl-naphthalene, 1873, 891.
- Froté, Ch.**, and **Donato Tommasi**, action of benzyl chloride on naphthylamine, 1873, 1147.
- Frühling, Robert**, and **Julius Schulz**, flesh-meal, 1875, 1061.  
 ———— preparation of betaine, 1877, ii., 627.  
 ———— quality of milk, 1880, A., 352.
- Fuchs, E.** See **Oemler**.
- Fuchs, Edmond**, vinyl bromide, 1873, 45.
- Fuchs, Edmond.** See also **E. Cumenge**.
- Fuchs, Friedrich**, nitrosanaphthol, 1876, i., 247.
- Fuchs, Friedrich.** See also **Adolf Pinner**.
- Fuchs, Fritz**, detection of alternations of electricity by means of flame, 1876, i., 667.  
 ———— division of the positive metal in the galvanic circuit between two acids, 1877, i., 677.
- Fudakowski, Hermann**, contributions to the theory that oxygen becomes active during slow oxidation, 1873, 594.  
 ———— the two sugars obtained from sugar of milk, 1875, 879.  
 ———— galactose, 1876, i., 697  
 ———— action of potassium permanganate on a neutral solution of dulcitol, 1877, ii., 877.  
 ———— lactoglucose and galactose, 1877, ii., 877; 1879, A., 137.  
 ———— digestion of linseed-mucilage with artificial gastric juice, 1877, ii., 911.  
 ———— derivatives of milk sugar, 1878, A., 777.
- Fürbringer, Paul**, elimination of oxalic acid in the urine, 1878, A., 162.  
 ———— detection of mercury in urine, 1878, A., 1010.
- Fürst, Ernst**, action of chlorine tetroxide on potassium permanganate, 1881, A., 353.  
 ———— chlorine tetroxide and ethylene, 1881, A., 399.
- Fürst, Ernst.** See also **Leopold von Febal**.
- Fürstenau, C.**, the manufacture of ultramarine, 1876, ii., 223.
- Fürth, Hugo**, berberonic acid, 1882, A., 230.



- Funaro, Angiolo**, quantitative separation of iron and manganese in ferromanganese ores, 1877, ii., 805.  
 — salts obtained from the mother liquors of the Volterra brine springs, 1878, A., 652; 1880, A., 146.  
 — formation of fatty matter and ripening of the olive, 1880, A., 568.  
 — decomposition of calcium succinate by heat, 1881, A., 1031.  
 — composition of Italian fodders, 1882, A., 1127.  
**Funaro, Angiolo**, and **Leobaldo Danesi**, succinin, 1880, A., 463.  
**Funaro, Angiolo**. See also *Finusto Sestini*.

## G.

- “**G., H.**,” manuring with kainite, 1882, A., 92.  
**Gabba, Luigi**, the recognition of colours on textile fabrics, 1873, 654.  
**Gabba, Luigi**, and **Otto Textor**, influence of the chemical composition of the water used in the preparation of raw silk, 1879, A., 493.  
**Gabriel, Siegmund**, ammelide and melanureic acid, 1876, i., 378.  
 — iodoazo- and bromazo-compounds of benzene, 1877, i., 307.  
 — *o*-thioformic ethers, 1877, ii., 311.  
 — disulphocyanobenzene, 1877, ii., 325.  
 — substituted phthalanils, 1879, A., 323.  
 — derivatives of thiacetic acid, 1880, A., 33.  
 — action of hydrocyanic acid on diazo-compounds, 1880, A., 41.  
 — a base from phthalimide, 1881, A., 263.  
 — sulphonacetic acids, 1881, A., 716.  
 — phthalic anhydride condensation products, 1881, A., 733.  
 — preparation of *p*-nitrophenylacetic acid, 1882, A., 188.  
 — phenylacetic acid, 1882, A., 1070.  
**Gabriel, Siegmund**, and **Anastasius K. Dambergis**, nitro-derivatives of diphenylmono- and di-sulphonic acids, 1880, A., 890.  
**Gabriel, Siegmund**, and **Alfred Deutsch**, sulphur derivatives of diphenyl, 1880, A., 476.  
**Gabriel, Siegmund**, and **Rudolf Meyer**, dinitrophenylacetic acid and its derivatives, 1881, A., 729; 1882, A., 188.  
**Gabriel, Siegmund**, and **Arthur Michael**, action of dehydrating agents on anhydrides, 1877, ii., 486; 1878, A., 229, 426, 734; 1879, A., 245.  
**Gabriel, Siegmund**, and **Arthur Michael**, benzylmethylglycolic acid, 1879, A., 795.  
**Gabriel, Siegmund**, and **Hugo Steudemann**, hydrocinnamic acid, 1882, A., 1073.  
**Gabriel, Siegmund**, and **Hennig Christoph Julius Zimmermann**, dinitrohydrocinnamic acid and its derivatives, 1879, A., 639; 1881, A., 274.  
**Gabriel, Siegmund**. See also *Rudolf Biedermann*.  
**Gaebler, Georg**. See *Robert Otto*.  
**Gaenge, Chr.**, the spectroscopy of blood-pigments, 1876, ii., 640.  
 — isodimorphism of arsenious and antimonious oxides, 1881, A., 791.  
**Gaffield, Thomas**, action of sunlight on glass, 1882, A., 352.  
**Gagarin, G.**, the isomeric compounds  $C_6H_4Br$ , 1874, 1075.  
**Gaier, Julius**. See *Karl Birnbaum*.  
**Gaiffe, A.**, drawing of fine platinum wires, 1878, A., 178.  
 — note on a new dioxide of manganese cell, 1878, A., 633.  
 — electro-deposition of cobalt, 1878, A., 1019.  
**Gail, Fr.** See *Wilhelm Staedel*.  
**Gajewsky, Iwanoff**, curcumin, 1873, 504, 760.  
**Gal, Henri**, the chloride, bromide, and iodide of trichloroacetyl, 1873, 745.  
 — a supposed isomeride of piperidine, obtained from the nitro-derivatives of the group  $C_nH_{2n}$ , 1873, 1025.  
 — essence of *Unona odoratissima*, 1873, 1149.  
 — tribromoacetic acid, 1874, 141.  
**Gal, Henri**, and **Alexandre Léon Etard**, formation of the anhydrous acids of the fatty, and of the aromatic series, by the action of phosphoric anhydride on the corresponding acids, 1876, i., 899.  
 — researches on strychnine, 1879, A., 387.  
**Galbraith, William**, determination of manganese in spiegeleisen, 1876, i., 750.  
 — analysis of chrome-iron and steel, 1877, ii., 357.  
**Galimberti, A.**, a critical point in making Parmesan cheese, 1879, A., 764.  
**Galimberti, A.** See also *Ermenegildo Rotondi*.  
**Galle, Johann Gottfried**, and **Arnold Constantin Peter Franz von Lasaulx**, fall of meteorites at Guadenfrei in Silesia, 1881, A., 395.



- Galletly**, spontaneous combustion of oiled cotton waste, 1874, 727.
- Gallois, François Narcisse**, and **Ernest Hardy**, *Erythrophleum guineense* and *E. Couningo*, 1876, ii., 532.
- Gallois, François Narcisse**. See also **Ernest Hardy**.
- Galloway, Robert**, extraction of iodine and bromine from kelp, 1878, A., 1017.
- Galloway, William**, influence of coal-dust in colliery explosions, 1880, A., 439; 1881, A., 950.
- Gallus, L.**, glaze for cooking vessels with and without lead, 1878, A., 814.
- Gamgee, Arthur**, a note on protagon, 1881, A., 1047.
- Gamgee, Arthur**, and **Ernst Blankenhorn**, protagon, 1879, A., 950.
- the existence of Liebreich's protagon in the brain, 1881, A., 1047.
- Gantter, Friedrich** and **Carl Hell**, suberic acid produced by oxidation, 1880, A., 872.
- azelaic acid, 1881, A., 578.
- separation of suberic and azelaic acids, 1881, A., 891.
- bromo-derivatives of suberic acid, 1882, A., 716.
- Garainoff**, trimethylethylformene, 1873, 43.
- Gard, William E.**, cast nickel; combining of carbon and silicon with nickel, 1878, A., 376.
- Garnier, Jules**, the nickel ore of New Caledonia called garnierite, 1876, ii., 492; 1878, A., 480.
- malleable nickel, 1880, A., 930.
- purification of arsenical copper, 1882, A., 432.
- Garnitsch-Garnitzky**, action of carbonic oxide on aniline, toluidine, acetylene, &c., 1878, A., 217.
- Garrigou, Félix**, nature and estimation of the sulphuretted compounds in mineral waters; analysis of the Bayen spring at Luchon, 1874, 1148.
- action of sulphuretted hydrogen on the granites of Luchon, 1874, 1149.
- new experiments on the nature of the sulphuretted principle in the waters of Luchon, 1874, 1149.
- whey from Luchon, 1876, i., 115.
- presence of mercury in the spring "du Rocher" at the establishment Mont Carmadore (St. Nectaire le Haut, Puy-de-Dôme), 1877, ii., 418.
- Garside, Thomas**, milk testing, 1873, 537.
- laboratory notes, 1875, 1287.
- Garside, Thomas**, mending platinum crucibles, 1878, A., 1020.
- Garzarolli-Thurnlackh, Karl (Edler) von**, trichlorobutyric acid, 1876, ii., 623.
- action of potash on trichlorobutyric acid, 1877, i., 59.
- chlorine trioxide, 1881, A., 506; 1882, A., 460.
- action of zinc ethyl and zinc methyl on chlorinated aldehydes, 1882, A., 295.
- action of zinc ethyl on butyl-chloral, 1882, A., 824, 1279.
- Garzarolli-Thurnlackh, Karl (Edler) von**, and **Karl (Freiherr) von Hayn**, chlorites, 1882, A., 460.
- Gasch, Rob.** sal-ammoniac in gas-liquor, 1874, 727.
- Gasparin, Paul de**, value of the waters of the Isère and Durance for agricultural purposes, 1882, A., 92.
- use of superphosphates on the calcareous soils of the south-east of France, 1882, A., 1130.
- composition of superphosphates, 1882, A., 1315.
- Gatehouse, James Wright**, detection of arsenic, 1873, 942.
- rapid mode of detecting the adulteration of butter with other fats, 1876, i., 764.
- action of manganese dioxide on ammonium nitrate, 1877, ii., 112.
- salt in beer, 1877, ii., 940.
- Gatellier, E.**, absorption of atmospheric nitrogen by plants, 1879, A., 818.
- Gaudich, H.**, manuring experiments on oats, 1881, A., 1077.
- Gaudin, M. A.**, application of the author's atomic theory to certain minerals, 1878, A., 843; 1879, A., 602.
- Gaudoin, Octave**, copper-plating of cast-iron, malleable iron and steel, 1873, 955.
- Gauduin**, effect produced by the admixture of foreign substances with charcoal in the preparation of carbon points for the electric light, 1877, ii., 104.
- Gault**, monobrominated camphor, 1875, 570.
- Gautier, Emile Justin Armand**, compounds in which phosphorus appears to exist in an allotropic state, 1873, 352.
- action of silver chloride on phosphorus diiodide, 1874, 542.
- production of a substance analogous to common albumin by the breaking up of fibrin, 1874, 1175.

- Gautier, Emile Justin Armand**, coagulation of blood as influenced by saline solutions, 1875, 1207.
- on the complete separation of arsenic from animal matters and its estimation in various tissues, 1876, i., 110.
- the fraudulent coloration of wines, 1876, ii., 330, 428; 1877, ii., 935.
- decomposition of moist or dry bicarbonates of the alkalis by heat and reduced pressure, 1876, ii., 602.
- dilution of wines; influence of plastering, fining, brandying, &c., on the weight of the extracts, 1877, i., 750.
- on the catechins, 1877, ii., 892; 1878, A., 64, 515.
- cenotannin, 1877, ii., 897.
- the ferruginous colouring matter of red wines, 1878, A., 904.
- colouring matter of wines, 1878, A., 987.
- chlorophyll, 1880, A., 266.
- presence of copper in food, 1880, A., 490.
- pure methyl cyanide, 1880, A., 618.
- isomerides of phloroglucol, 1881, A., 272.
- soluble and insoluble modifications of the gastric ferment, 1882, A., 752.
- alkaloids derived from proteid animal matter, 1882, A., 873.
- insoluble modification of pepsin, 1882, A., 877.
- Gautier, Emile Justin Armand, and Alexandre Léon Etard**, the mechanism of putrid fermentation of proteid substances, 1882, A., 1115.
- Gautier, Emile Justin Armand, Paul Cazeneuve, and Georges Daremberg**, colloid degeneration, 1875, 658.
- Gautier, Ferdinand**, dephosphorisation of iron ores, 1877, i., 759.
- manganese steel, 1877, ii., 376.
- Gavazzi, Pietro**, analysis and fertilising power of lavas, etc., 1877, ii., 861.
- Gawalowski, A.**, improved apparatus for use in quantitative analysis, 1874, 287.
- pulverisation of chlorates for pyrotechnical purposes, 1874, 1022.
- recovery of uranium residues, 1877, i., 345.
- comparative analyses of filter papers, 1877, ii., 217.
- adulteration of sodium palladium chloride with sodium chloride, 1877, ii., 225.
- direct estimation of gold in anti-mony-regulus in presence of arsenic, copper, iron, and zinc, 1878, A., 245.
- Gawalowski, A.**, a process for utilizing the residue from the manufacture of potassium ferrocyanide, 1879, A., 680.
- estimation of carbonic anhydride in gases, 1880, A., 573.
- determination of sap in beet, 1880, A., 829.
- Gay, J.**, absorption of nitrogen dioxide by ferrous salts, 1880, A., 9.
- Gayon, Ulysse**, the spontaneous alteration of eggs, 1873, 522, 1150.
- crystals in eggs, 1876, i., 91.
- inactive glucose in crude cane sugars, 1877, ii., 303; 1879, A., 97.
- action of antiseptic and toxic vapours on the fermentation of fruit, 1877, ii., 508.
- inversion and alcoholic fermentation of cane sugar, 1879, A., 336.
- inactive glucose or neutral sugar, 1880, A., 458.
- spontaneous changes in raw sugars, 1881, A., 332.
- recovery of cane sugar from molasses by fermentation, 1881, A., 480.
- influence of succinic acid on the fermentation of cane sugar, 1881, A., 836.
- Gayon, Ulysse, and Alexis Millardet**, on the saccharine matter contained in vines suffering from phylloxera, 1879, A., 1049.
- Gé, G.**, ethereal nitrates from milk sugar, 1882, A., 1042.
- Geary**. See **Roswag**.
- Gebhard, Ferd.** See **Rudolph Fittig**.
- Gedl, M.**, influence of salicylic acid and sodium salicylate on body temperature, 1877, i., 732.
- Gegerfelt, Harald von**, action of hypochlorous acid on allyl chloride, 1873, 1123.
- glycide, 1875, 879.
- Geinitz, Franz Eugen**, mineral pseudomorphs, 1877, i., 691.
- Geisler, Carl**. See **Rudolph Fittig**.
- Geissler, Ewald**, the bitter constituent of *Solanum Dulcamara*, 1876, i., 714.
- estimation of acids in oil, 1878, A., 534.
- examination of pressed yeast, 1881, A., 1183; 1882, A., 113.
- ethereal oils, 1882, A., 120.
- papayotin, 1882, A., 1118.
- Geldern, H. van**, a substance in beer resembling colchicine, 1877, i., 325.
- Geleznov, N.**, quantity and distribution of water in trees, 1880, A., 912.
- Gélis, Alfred**, use of alkaline sulphides in leather dressing, 1877, ii., 243.

- Gélis, Amédée**, action of sulphur on arsenic, 1873, 843.
- Genay, Paul**, permanent pasture, a substitute for clover, 1880, A., 499.
- manuring experiments with wheat, 1880, A., 922.
- experiments with artificial manures, 1881, A., 641.
- Genth, Frederick Augustus**, pseudomorphs of spinel after corundum, 1874, 549.
- kerrite, maconite, willcoxite, and dudleyite, new mineral species, 1874, 550.
- tourmaline as a transformation product of corundum, 1874, 1068.
- fibrolite and cyanite as transformation products of corundum, 1874, 1068.
- tellurium and bismuth ores from North America, 1875, 429.
- some American vanadium minerals, 1877, i., 175.
- an analysis of Siberian volborthite, 1878, A., 382.
- coloradoite, a new mineral, 1878, A., 383.
- calaverite, 1878, A., 383.
- native tellurium in Colorado, 1878, A., 383.
- tellurite, 1878, A., 709.
- uranium minerals from N. Carolina, 1880, A., 96.
- pyrophyllites from Schuylkill Co., Pennsylvania, 1881, A., 378.
- Genth, Frederick Augustus**, and **William C. Kerr**, the minerals and mineral localities of N. Carolina, 1882, A., 147.
- Genth, Frederick Augustus, junior**, Spanish minerals, 1881, A., 1110.
- Georgiefski**. See **Lefberg**.
- Gérardin, A.**, amount of oxygen dissolved in rain and river water, 1873, 740.
- oxygen in the water of artesian wells, 1874, 968.
- some physical properties of ordinary waters, 1876, ii., 336.
- Gérardin, A.** See also **Paul Schützenberger**.
- Gerber, Maximilien**, preparation of chrome-iron and analogous compounds, 1877, ii., 709.
- Gerber, Maximilien**. See also **Auguste Rosenstiehl**.
- Gerber, Nielsus**, milk analysis, 1875, 1296; 1876, ii., 328.
- Gerber, Nielsus** (and others), milk analysis, 1881, A., 657.
- Gergens, E.**, and **Eugen Baumann**, behaviour of guanidine, dicyanodiamine, and cyanamide in the urine, 1876, ii., 110.
- Gerichten, Eduard von**, selenic acid and selenates, 1873, 725.
- the sulphur compounds of selenium, 1874, 436.
- notes on the analysis of crystalline rocks, 1874, 708.
- eclogite from Upper Franconia, 1874, 780.
- the terpene of parsley oil, 1876, ii., 78.
- apiin, 1876, ii., 533.
- apiole, 1877, i., 326.
- cymene derivatives, 1878, A., 49.
- $\beta$ -chlorocymene from thymol, 1878, A., 570; 1879, A., 230.
- chloronitrocymene, bromonitrocymene, and so-called solid nitrocymene, 1878, A., 787.
- constitution of phthalic chloride, 1880, A., 473.
- apophyllitic acid, 1881, A., 110.
- cotarnine, 1881, A., 445; 1882, A., 313, 869.
- codeine, 1882, A., 311.
- pyridine-betaine, 1882, A., 1109.
- Gerichten, Eduard von**, and **William Rössler**,  $\alpha$ -oxy-*p*-toluic acid, 1878, A., 672; 1879, A., 323.
- Gerichten, Eduard von**, and **Hugo Schrötter**, morphine, 1882, A., 530.
- morphine and codeine, 1882, A., 1112.
- Gerlach, G. Th.**, on certain gas-liquors from gas works and on the chlorides contained in certain coals, 1873, 302.
- investigation of several ammonia liquors from gas works, 1875, 195.
- use of the ammonia-soda process in working up gas-liquors, 1877, ii., 236.
- extraction of sulphur by means of superheated steam, 1879, A., 284.
- Gerland, B. William**, note on metavanadic acid, 1873, 605.
- notes on vanadium compounds, 1876, ii., 483.
- on ammonium vanadate precipitated from alkaline vanadates with ammonium chloride, 1877, ii., 802.
- separation of vanadic acid from alkalis, 1877, ii., 922.
- analysis of vanadium sulphate and double sulphates (alkaline), 1878, A., 244.
- use of vanadium for the titration of permanganate, 1878, A., 244.
- sulphates of vanadium tetroxide, 1878, A., 271.

- Gerland, B. William**, heating power of brown coal, 1878, A., 349.  
 — sulphates of vanadium pentoxide, 1878, A., 375.  
 — some presumably new earths, 1878, A., 934.
- Gerland, Ernst**, the part borne by chlorophyll in the assimilative action of plants and the spectrum of leaves, 1873, 401.
- Gerland, W.**, preservation of beet leaves and the preparation of brown hay from maize, 1879, A., 960.
- Gerlich, Gustav**, isopropyl and allyl sulphocyanates, 1875, 1019.  
 — action of benzoyl chloride on cyanamide and sodium cyanide, 1876, ii., 196.
- Germain, Pierre**, a photo-electric regulator for painted-glass furnaces, 1881, A., 125.
- Gernez, Désiré**, on the supposed action of liquid films on supersaturated solutions, 1873, 720.  
 — on the supposed action of liquids of feeble surface tension on liquids of strong surface tension, 1873, 722.  
 — on the crystallisation of supersaturated solutions of sodium sulphate, 1874, 543.  
 — evaporation of liquids at temperatures higher than their boiling points, 1874, 1129.  
 — prismatic and octahedral sulphur, 1874, 1133; 1877, i., 44.  
 — solutions of chrome alum, 1875, 238.  
 — the analogy between the disengagement of gases from their supersaturated solutions and the decomposition of certain explosive bodies, 1875, 417.  
 — evaporation of superheated liquids, 1876, i., 868.  
 — condition of salts in solution, 1877, ii., 273.  
 — supersaturated solutions, 1877, ii., 696.  
 — ebullition of superposed liquids, 1878, A., 364.  
 — distillation of liquids under the influence of static electricity, 1879, A., 997.
- Gerrard, Alfred W.**, ergot and its liquid extract, 1875, 1272.  
 — alkaloid of *Duboisia myoporoides*, 1878, A., 589.  
 — tonga, 1880, A., 836.
- Gerresheim, Hugo**, ammoniacal mercury compounds, 1879, A., 438.
- Gerstl, Rudolf**, obituary notice of, 1882, T., 237.
- Gerver, F.**, *o*-toluidinesulphonic acid, 1874, 166.
- Gessner, Emil**, the exhaustive action of bromine on some aromatic bodies, 1877, i., 300.  
 — on the naphthalenesulphonic acids, 1877, i., 315.
- Gessner, Emil**. See also **Victor Merz**.
- Geuther, Anton**, the hydrates of monobasic acids, 1873, 838.  
 — action of nitrogen tetroxide on arsenic trichloride and on boron trichloride, 1874, 539.  
 — action of phosphorus chlorides on the acids of phosphorus, 1874, 540.  
 — constitution of nitroethane, 1875, 445.  
 — on the constitution of phosphorus bromochlorides, and on "molecular compounds," 1877, i., 274.  
 — constitution of phosphorous and hypophosphorous acids, 1877, i., 276.  
 — decompositions of phosphorus compounds, 1877, i., 296.  
 — diethylglyoxylic ether and diethylglyoxylamide, 1879, A., 220.  
 — action of carbonic oxide on alkaline hydrates at high temperatures, 1880, A., 459.  
 — behaviour of monochlorotetracrylic acid on fusion, 1880, A., 630.  
 — conversion of chlorocarbonic acid into formic acid, 1881, A., 248.
- Geuther, Anton**, and **F. Broekhoff**, action of chlorides on sodium ethylate, 1873, 866.
- Geuther, Anton, Oscar Frölich**, and **A. Looss**, new synthesis of carbon acids, 1880, A., 622.
- Geyer, Wm. E.** See **Henry Morton**.
- Geyger, Adolf**. See **August Wilhelm von Hofmann**.
- Ghizzoni, Angelo**, researches on the bleeding of vines, 1880, A., 133.
- Giacosa, Piero**, fermentation of hydroxyvaleric acid, 1879, A., 782.  
 — action of amyl nitrite on blood, 1879, A., 816.  
 — phenolglycollic acids, 1879, A., 929.  
 — salireton, 1880, A., 716.  
 — new method of estimating phenol, 1882, A., 778.
- Giacosa, Piero**. See also **Marcellus Nencki**.
- Giannetti, Carlo**, isobutylaniline, 1882, A., 1059.
- Giannetti, Carlo**, and **Alessandro Volta**, notes on ozone, 1875, 607.



- Giannetti, Carlo**, and **Alessandro Volta**, production of ozone by the discharge from the electric machine, 1876, ii., 378.
- Gibb, Thomas**, extraction of silver from cupreous iron pyrites, 1875, 921.
- Gibbs, Oliver Wolcott**, new forms of laboratory apparatus, 1873, 1194.
- estimation of magnesium, manganese, and cobalt, 1874, 92.
- separation of chromium and uranium, 1874, 93.
- the hexatomic compounds of cobalt, 1874, 340; 1875, 534.
- on complex inorganic acids, 1877, ii., 847; 1882, A., 702.
- osmylditetramine, 1882, A., 144.
- phosphotungstates, 1882, A., 469.
- Gibson, Adam**, preparation of a solution containing hypophosphites of iron, sodium, calcium, and magnesium, 1882, A., 670.
- Gibson, John**, composition of 'reh,' an inflorescence on the soil of certain districts of India, 1882, A., 650.
- Gies, Theodor**, influence of arsenic on animals, 1880, A., 907.
- Giesel, Fritz**, plastilina, 1878, A., 454.
- Giesel, Fritz**. See also *Carl Theodor Liebermann*.
- Giglioli, Italo**, resistance of seeds to the prolonged action of chemical agents, 1880, A., 280.
- Gilbert, C.**, estimation of phosphoric acid in Baker Island guano and in other similar substances, 1873, 1160.
- Gilbert, (Sir) Joseph Henry**, occurrence of fairy rings, 1876, i., 432.
- Gilbert, (Sir) Joseph Henry**, and **(Sir) John Bennet Lawes**, composition of potatoes, 1878, A., 999.
- Gilbert, (Sir) Joseph Henry**. See also **(Sir) John Bennet Lawes**, *Maxwell Tylden Masters*.
- Gilbert, Paul**. See *Mahrenholtz*.
- Gilm, Hugo von**, the flame reaction of boric acid as a lecture experiment, 1878, A., 645.
- Gintl, Wilhelm Friedrich**, diamond fuchsine, 1873, 208.
- on the manurial value of sewage-matter obtained by Liernur's system, 1875, 1048.
- poisonous dress materials, 1875, 1304.
- analysis of the mineral waters of Neudorf, near Petschau in Bohemia, 1877, ii., 861.
- new method of photographic enlargements, 1878, A., 456.
- Gintl, Wilhelm Friedrich**, water of the Ferdinandsbrunn-Quelle at Marienbad, Bohemia, 1880, A., 306.
- examination of the Ambrosiusbrunn-Quelle, Marienbad, Bohemia, 1882, A., 25.
- Giovannozzi, G.**, dimethylnaphthalene, 1882, A., 854.
- Girard, Adam Charles**, action of chlorides of alcohol radicles on primary and secondary monamines, 1876, i., 263.
- Girard, Adam Charles**, and **Jean Albert Pabst**, nitrosyl derivatives, 1879, A., 383.
- applications of lead chamber crystals, 1881, A., 476.
- Girard, Adam Charles**, and **Edmond Willm**, secondary monamines formed by the action of liquid toluidine on aniline hydrochloride, 1876, ii., 98.
- action of oxalic acid on diphenylamine, 1876, ii., 99.
- observations on the metamorphoses of the methyrosanilines, 1876, ii., 100.
- Girard, Aimé**, matezite, a volatile sugar obtained from Madagascar caoutchouc, 1874, 169.
- micrographic study of the manufacture of paper, 1875, 675.
- a hydrated derivative of cellulose, 1876, i., 696.
- transformation of saccharose into glucose in the operations of sugar refining, 1876, ii., 680.
- estimation of reducing sugar in commercial products, 1878, A., 166.
- hydrocellulose and its derivatives, 1879, A., 779; 1882, A., 378.
- conversion of hydrocellulose into pyroxylin, 1879, A., 911.
- estimation of astringent substances in wines, 1882, A., 1327.
- composition of wines made from marc, 1882, A., 1335.
- Girard, Aimé**, and **E. Laborde**, on the optical inactivity of the reducing sugar contained in commercial sugar, 1876, i., 806.
- Girard, Aimé**, and **Henri Morin**, the pyrites employed in France in the manufacture of sulphuric acid, 1876, i., 120.
- Girard, Aimé**. See also *Victor de Luynes*.
- Girard, Emil**, derivatives of  $\gamma$ -toluidine, 1873, 912.
- Girard, Joseph de**, spontaneous alteration of anhydrous hydrocyanic acid, and a new case of the complete transformation of that acid, 1877, i., 65.



- Girard, Joseph de**, propylacetal and isobutylacetal, 1881, A., 34.  
 — new combinations of aldehydes with phosphonium iodide, 1882, A., 710.
- Girard, Joseph de**. See also *Rodolphe Charles Engel*.
- Girardin, Jean Pierre Louis**, artificial production of vivianite, 1881, A., 1000.
- Girardin, Jean Pierre Louis**. See also **Bénard**.
- Giraud, E.**, examination of gums and mucilages, 1876, i., 62.  
 — derivatives of indigotin, 1879, A., 936.  
 — indoline, 1881, A., 51.
- Girgensohn, Leonhard**, estimation of albumin; compounds of the albuminoids with tannin, 1874, 192.
- Giunti, Michele**, distribution of copper in the animal kingdom, 1880, A., 275.
- Gladding, Thomas S.**, estimation of carbonic anhydride, 1881, A., 943.  
 — quantitative separation of rosin from fats, 1882, A., 663.  
 — determination of reverted phosphates, 1882, A., 1319.
- Gladstone, John Hall**, on cymene from various sources optically considered, 1873, 970.  
 — on some points connected with the chemical constituents of the solar system, 1878, A., 189.  
 — candles altered by long exposure to sea-water, 1878, A., 660.  
 — specific refraction and dispersion of isomeric bodies, 1881, A., 213.  
 — refraction equivalents of the diamond and of carbon compounds, 1881, A., 333.  
 — the refractive equivalents of carbon, hydrogen, oxygen, and nitrogen in organic compounds, 1881, A., 958; 1882, A., 133.
- Gladstone, John Hall**, and **Alfred Tribe**, on an air battery, 1873, 582.  
 — researches on the action of the copper-zinc couple on organic bodies. Part II., on the iodides of amyl and methyl, 1873, 678; Part III., on the *n*- and *iso*-propyl iodides, 1873, 961; Part IV., on the iodide of allyl, 1874, 208; Part V., on the bromides of the olefines, 1874, 406; Part VI., on ethyl bromide, 1874, 410; Part VII., on the chlorides of ethylene and ethylidene, 1874, 615; Part VIII., on chloroform, bromoform, and iodoform, 1875, 508; Part IX., preparation of zinc methyl, 1879, T., 107.
- Gladstone, John Hall**, and **Alfred Tribe**, decomposition of water by the joint action of aluminium, and of aluminium iodide, bromide, and chloride, including instances of reverse action, 1875, 822.  
 — decomposition of alcohol and its homologues by the joint action of aluminium and its halogen compounds, 1876, i., 158.  
 — electrolysis of certain metallic chlorides, 1876, i., 182.  
 — the replacement of electro-positive by electro-negative metals in a voltaic cell, 1876, ii., 37.  
 — the simultaneous action of iodine and aluminium upon ethers and compound ethers, 1876, ii., 357.  
 — preparation of copper-zinc couples, 1877, i., 561.  
 — action of the copper-zinc couple on alkaline oxy-salts, 1878, T., 139.  
 — analogies between the action of the copper-zinc couple and of occluded and nascent hydrogen, 1878, T., 306.  
 — investigations into the action of substances in the nascent and occluded conditions: hydrogen (continued), 1879, T., 172.  
 — on dry copper-zinc couples and analogous agents, 1879, T., 567.  
 — aluminium-iodine reaction, 1880, A., 861.  
 — aluminium alcohols. Part I. Their preparation by means of the aluminium-iodine reaction, 1881, T., 1. Part II. Their products of decomposition by heat, 1882, T., 5.  
 — thermal electrolysis, 1881, A., 868.
- Glässgen, Josef**, dampness of the walls of houses and its quantitative estimation, 1875, 286.
- Glässner, G.**, on the properties of the most frequently occurring fat oils of the vegetable kingdom with the method of testing and detecting them, 1873, 945.
- Glanzmann, R.**, the uses of patent colours, 1877, i., 115.
- Glaserapp, M.**, notes from the laboratory of the Riga Polytechnic, 1878, A., 535.
- Glass, William**, obituary notice of, 1880, T., 258.
- Glassner, H.**, *p*-iodobenzoic acid, 1875, 888.  
 — *p*-iodotoluenesulphonic acid, 1875, 897.

- Glassner, R.** See *Adolph Claus*.
- Glatzel, Emanuel**, the oxide of titanium obtained by the solution of titanium in acids, and some new titanium compounds, 1877, i., 688.
- Glatzel, P. G.**, new experiments on thermal expansion, 1877, ii., 820.
- Gleichmann, Ludwig**, behaviour of dimethylphenylphosphine with ethylene bromide, 1882, A., 958.
- Gleichmann, Ludwig**. See also *Carl Arnold August Michaelis*.
- Glénard, Alexandre**, emetine, 1876, i., 275.
- Glénard, Frantz**, cause of the spontaneous coagulation of the blood on its issue from the organism, 1876, i., 279.
- Glenck, Carl**, preparation of aniline-black, 1881, A., 1186.
- Glendinning, Nicholas**, and *A. J. M. Edger*, on a source of error in the valuation of pyrites, 1873, 531.
- separation of caustic soda into portions of different strengths on passing from the fused to the solid state, 1873, 949.
- Glinsky, Grigori**, improved apparatus for fractional distillation, 1875, 606.
- Gluge, O.**, calcium chloride, 1879, A., 562.
- Gnehm, Robert**, determination of the melting points of alloys of lead and tin, 1875, 728.
- derivatives of diphenylamine, 1876, i., 83, 265.
- *α*-toluenedisulphonic acid, 1877, ii., 893.
- Gnehm, Robert**, and *Carl Forrer*, preparation of toluenedisulphonic acid, 1877, ii., 611.
- Gnehm, Robert**, and *Georg Wyss*, derivatives of diphenyl, 1878, A., 52.
- Gobley, Th.**, lecithin and cerebrin, 1874, 908.
- chemical researches on the brain, 1875, 92.
- Godeffroy, Richard**, antimonious chloride as a test for cesium salts, 1874, 816.
- on some new salts and reactions of cesium and rubidium, 1875, 612.
- a new property of glycerin, 1875, 748.
- determination of the atomic weights of cesium and rubidium, 1876, ii., 272.
- silicotungstates of cesium and rubidium, 1877, i., 175.
- some new reactions of alkaloids, 1877, i., 348; ii., 365.
- Godeffroy, Richard**, cesium and rubidium compounds, 1877, i., 685.
- ash of *Xanthium Spinosum*, 1877, ii., 351.
- distinctive tests for cinchona alkaloids, 1878, A., 344.
- Godefroy, Jules**, and *Alfred Dudouy*, permanent pasture a substitute for clover, 1880, A., 499.
- cultivation of various kinds of beet, 1881, A., 117.
- Godlewski, Emil**, influence of the carbonic acid in the air on the growth of plants, 1874, 381.
- causes of the change in the form of etiolated plants, 1880, A., 177.
- Goebel, Hugo**, the manufacture of nitric acid, 1876, ii., 332.
- Göbel, Willh.**, purification of gas by ammonia, 1879, A., 986.
- Göpner, Carl**, the nature of bleaching powder, 1874, 195, 655.
- on the so-called chlorine hydrate, 1875, 732.
- Göring, Rob.** See *August Laubheimer*.
- Göring, Theodor**, *p*-bromo-*m*-sulphophenylpropionic and *m*-sulphopropylpropionic acids, 1878, A., 318.
- Goës, Bruno**, diphenyldiimidonaphthol, 1880, A., 399.
- Goessmann, Charles A.**, manuring of sugar-beet in America, 1880, A., 418.
- amount of sugar in sorghum, maize, and melons, 1880, A., 594.
- Götschmann, Th.**, methyl- and dimethyl-diacetonamine, 1879, A., 1035.
- Götter, Herm.**, and *Carl Arnold August Michaelis*, action of water on phosphenyl chloride, a phenylated solid phosphoretted hydrogen,  $C_6H_5P_4H$ , 1878, A., 723.
- Göttig, Christian**, ethyl compounds of salicylic acid, 1877, i., 313.
- note on the synthesis of the aldehydes, 1877, ii., 304.
- a new ether of glycerin, 1878, A., 318.
- Goldberg, Alvin**, *p*-hydroxysalicylic acid, 1879, A., 928.
- action of chloride of lime on the alcohols, 1882, A., 28.
- Goldberg, Alvin**. See also *Rudolf Wilhelm Schmitt*.
- Goldenberg, Hermann**, some derivatives of benzoïn, 1874, 694.
- action of nascent hydrogen on benzoïn, 1875, 365.
- Goldenberg, Hermann**. See also *Julius Bonné*.

- Goldschmidt, Anton**, ethylidene-imido-silver nitrate, 1878, A., 965.  
 — the three isomeric tolidines (*di-amidoditolyts*), 1879, A., 235.  
**Goldschmidt, Anton**. See also *Carl Theodor Liebermann*.  
**Goldschmidt, Heinrich**, an acoustic method of determining vapour densities, 1881, A., 12.  
 — Gay Lussac's hypochloronitric anhydride, 1881, A., 506.  
 — action of molecular silver on carbon chlorides, 1881, A., 707.  
 — quantivalence of phosphorus, 1882, A., 8.  
 — glyoxaline, 1882, A., 166.  
 — phosphorus pentasulphide, 1882, A., 693.  
 — synthesis of aromatic hydrocarbons, 1882, A., 952, 1196.  
**Goldschmidt, Heinrich**. See also *Victor Meyer, Benjamin Reinitzer*.  
**Goldschmidt, Viktor**, blowpipe examination of chloride, bromide, and iodide of silver by means of bismuth, 1877, ii., 356.  
**Goldschmiedt, Guido**, action of bromal and chloral on benzene, 1874, 150.  
 — diphenylethane, 1874, 370.  
 — decomposition of brassic acid by caustic potash, 1878, A., 28.  
 — idryl, 1878, A., 155; 1881, A., 283.  
 — products of the decomposition of a gum-ammoniac resin from Morocco, by fusion with potash, 1878, A., 738.  
 — idriatin, 1879, A., 167.  
 — some new aromatic hydrocarbons, 1882, A., 202.  
 — mononitro- and dinitro-pyrene and amidopyrene, 1882, A., 206.  
 — occurrence of succinic acid in an incrustation on the bark of *Morus alba*, 1882, A., 602.  
**Goldschmiedt, Guido**, and *Giacomo Luigi Ciamician*, a modification of vapour density determinations, 1877, ii., 404.  
**Goldschmiedt, Guido**, and *Eduard Hepp*, a new hydrocarbon of the stilbene series, 1874, 370.  
**Goldschmiedt, Guido**, and *Josef Herzig*, decomposition of the calcium salts of the three hydroxybenzoic acids and of anisic acid by dry distillation, 1882, A., 616.  
**Goldschmiedt, Guido**, and *Max von Schmidt*, examination of "stuppfeet," 1881, A., 823.  
**Goldschmiedt, Guido**, and *Hugo Weidel*, quassin, 1878, A., 80.  
**Goldschmiedt, Guido**. See also *Ludwig (Ritter) Barth von Barthenau, Franz Exner, Hugo Weidel*.  
**Goldsmith, Eduard**, sonomaite, a new mineral, 1878, A., 384.  
**Goldstein, Eugen**, spectra of gases, 1875, 527; 1876, i., 181.  
 — band spectrum of air, 1882, A., 677.  
**Goldstein, Michail I.**, oxidation of the volatile nitrophenol, 1874, 1092.  
 — action of benzoyl chloride on dinitrophenol, 1876, ii., 298.  
 — action of nitric acid on phenol and on nitrophenols, 1879, A., 148.  
 — dibenzoyldinitrodiphenol, 1879, A., 148.  
 — boiling points of normal paraffins, 1879, A., 765.  
 — oxidation of ketones, 1881, A., 423.  
 — boiling points of normal saturated hydrocarbons, 1882, A., 374.  
**Golubeff, Porphiri Grigor**, reduction of nitrobenzil by tin, 1874, 273.  
 — dinitroazobenzoic acid, 1874, 805.  
 — action of ethyl iodide on silver azobenzoate, 1875, 1203.  
 — action of nitric acid on deoxybenzoin, 1879, A., 150.  
 — nitro- and amido-derivatives of deoxybenzoin, 1879, A., 790.  
 — dinitro-derivatives of deoxybenzoin, 1881, A., 422.  
**Gonnard, Ferdinand**, the zeolites of the Département Puy-de-Dôme, 1877, ii., 283.  
 — associated minerals contained in certain trachytes from the ravine of Riveau-Grand at Mont Dore, 1880, A., 225.  
 — a new locality of szaboite, 1881, A., 378.  
 — existence of a new mineral species, dumortierite, in gneiss from Beaunan, near Lyons, 1882, A., 151.  
 — existence of epidote in the syenite of the ravin d'Enval, near Riom (Puy-de-Dôme), 1882, A., 292.  
 — existence of a mineral analogous to tachylyte in a basalt of the environs of Royat (Puy-de-Dôme), 1882, A., 292.  
**Gooch, Frank Austin**, estimation of phosphoric acid as magnesium pyrophosphate, 1881, A., 1168.  
**Goppelsroeder, Friedrich**, estimation of tin by titration, 1875, 383.  
 — analysis of beer, 1876, i., 768.  
 — on electrolytic aniline-black, 1876, i., 815.

- Goppelsroeder, Friedrich**, effects produced on cotton fabrics by ozone and frost, 1876, ii., 231.
- on the electrolysis of the derivatives of aniline, phenol, naphthylamine and anthraquinone, 1876, ii., 308.
- composition of aniline-black, 1876, ii., 639.
- aniline-black dye bath: transformation of aniline-black into a fluorescent rose-coloured substance, 1877, ii., 606.
- metamorphoses of aniline-black, 1877, ii., 763.
- use of electrolysis in dyeing and printing, 1882, A., 1338.
- Goppelsroeder, Friedrich**. See also *Eugen Dollfus*.
- Gorceix, Henri**, the recent eruption of Nisyros, 1873, 1212; 1874, 347, 561, 1073; 1875, 48.
- rock interstratified in the gneiss of Mantiqueira, Brazil, 1876, ii., 56.
- some Brazilian minerals (euclase, andalusite, tourmalines), 1878, A., 118.
- martite from Brazil, 1880, A., 447.
- Gore, George**, on some properties of anhydrous liquefied ammonia, 1873, 473.
- thermo-electric properties of liquids, 1880, A., 431.
- chemico-electric relations of metals in solutions of potassium salts, 1881, A., 962; 1882, A., 261.
- effects of electric currents on the surfaces of mutual contact of aqueous solutions, 1881, A., 962; 1882, A., 260.
- thermo-electric behaviour of aqueous solutions with platinum electrodes, 1881, A., 963.
- electric currents caused by liquid diffusion and osmose, 1881, A., 963.
- electrolytic diffusion of liquids, 1881, A., 963; 1882, A., 565.
- some effects of transmitting electric currents through magnetised electrolytes, 1882, A., 566.
- Gorgeu, Alexandre**, on the capacity of saturation of manganous acid, 1877, i., 442.
- artificial manganese dioxide, 1879, A., 600.
- basic salts of manganese, 1882, A., 1032, 1172.
- Gorjainoff, Wladimir**, and *Alexander M. Butleroff*, polymerisation of the olefines, and production of ethyl alcohol from ethylene, 1874, 138.
- Gorjainoff, Wladimir**. See also *Alexander M. Butleroff*.
- Gorkom, Karel Wessel van**, cinchona cultivation in Java, 1874, 184.
- Gorup-Besanez, (Freiherr) Eugen Franz Cajetan von**, leucin existing in young vetches, 1874, 494, 912.
- the blood in splenic leuchæmia, 1874, 811.
- ostruthin, a new crystallisable vegetable principle, 1874, 907; 1877, i., 717.
- notice on a substance called ditaine, 1875, 773.
- occurrence in the seeds of the vetch of a diastatic ferment which produces peptones, 1875, 1286.
- on diastase and the peptone-forming ferments of vegetables, 1876, i., 738; ii., 322.
- glutamic acid from the juice of vetch germ, 1877, ii., 739.
- analysis of the water of the Schönbornsquelle at Kissingen, 1878, A., 843.
- Gorup-Besanez, (Freiherr) Eugen Franz Cajetan von**, and *Hermann Will*, further communications on the diastatic and peptone-forming ferments in plants, 1876, ii., 322.
- Goslich, Carl**, *p*-bromobenzenesulphonic acid, 1875, 764; 1876, i., 929.
- *p*-chlorobenzenesulphonic acid, 1876, i., 930.
- a new dibromobenzenesulphonic acid, 1877, ii., 460.
- Gossmann, Arthur**. See *Otto Wallach*.
- Goth, A.** See *Theodor Weyl*.
- Gottfriedsen (& Co.)**, on tanning and mineral tanning, 1879, A., 100.
- Gottlieb, Johann**, hydrated silicic acid, 1873, 351.
- trichlorobutyric acid, 1874, 356; 1876, i., 561.
- monochlorocitraconic acid, 1874, 358.
- Gottwalt, Eduard**, quantitative analysis of the albuminoids of the kidney substance, 1881, A., 661.
- filtration of albuminous solutions through animal membranes, 1882, A., 538.
- Gouillon, F.**, aniline-black by means of vanadium, 1878, A., 454.
- Gourdon, Camille**, observations on the influence of metallic deposits on zinc in presence of acids and alkalis; new heliographic methods, 1873, 1203.
- Gouvenain, C. A. de**, mineral waters of Vichy and its neighbourhood, 1873, 859.
- sulphuration of copper and of iron by a mineral water, 1875, 1168.



- Gouy, A.**, spectra of metals at the base of flames, 1877, ii., 105.  
 — photometric researches on coloured flames, 1877, ii., 817.  
 — character of flames charged with saline dust, 1877, ii., 817.  
 — transparency of coloured flames, 1878, A., 629.  
 — measurement of the intensity of some obscure rays in the solar spectrum, 1881, A., 333.
- Govi, Gilberto**, on the law of absorption and its employment in quantitative spectrum analysis, 1878, A., 190.
- Grabowski, Julian**, action of sulphuric acid on chloral, 1873, 878; 1874, 46.  
 — on some naphthalene compounds, 1873, 891.  
 — action of pyromellitic acid on  $\alpha$ -naphthol, 1874, 64.  
 — dinaphthylmethane and its derivatives, 1875, 455.  
 — chloralide and insoluble chloral, 1876, i., 551.  
 — action of chlorine on acetone, 1876, i., 557.  
 — Galician ozokerite, and ceresin, 1877, ii., 284.  
 — compounds of naphthalene with chloral, 1878, A., 508.
- Grabowski, Nicolas H.**, action of nitric acid on *n*-butyl sulphide, 1875, 628, 1175.  
 — *n*-sulphobutyric acid and its salts, 1875, 881.
- Grabowski, Nicolas H.**, and **Alexander M. Saytzeff**, sulphur derivatives of the primary butyl alcohols, 1874, 565.  
 — butylene bromide and butyl glycol from *n*-butyl alcohol, 1876, i., 542.
- Gradmann, Arnold**. See **Wilhelm Michler**.
- Graebe, Carl**, a new hydrocarbon isomeric with anthracene, 1873, 175.  
 — phenanthrene and its synthesis, 1873, 633, 894; 1874, 471.  
 — behaviour of quinones when heated with soda-lime, 1873, 635.  
 — synthesis of carbazole, 1873, 1034.  
 — diphenylene sulphide and disulphide, 1874, 469; 1876, i., 578.  
 — action of heat on methyldiphenylamine, 1874, 481.  
 — a new method of preparing diphenylene oxide, 1874, 797.  
 — chrysoquinone, 1874, 989.  
 — formation of diphenyl compounds within the molecule, 1875, 274.
- Graebe, Carl**, on the difference between the boiling points of diphenyl and diphenylene compounds, 1875, 454.  
 — reduction products of aromatic ketones, 1875, 457.  
 — reduction of aromatic compounds by hydriodic acid and phosphorus, 1876, i., 70.  
 — alizarin-blue, 1879, A., 259; 1880, A., 262.  
 — alizarinsulphonic acid, 1879, A., 655.  
 — occurrence of *p*-leucaniline in the manufacture of rosaniline, 1880, A., 162.  
 — carbazole, 1880, A., 660.  
 — reactions of naphthol, 1881, A., 177.
- Graebe, Carl**, and **H. Behagel von Adlerskron**, some derivatives of carbazole, 1880, A., 660.
- Graebe, Carl**, and **Henry Bungener**, synthesis of deoxybenzoin, 1879, A., 790.  
 — synthesis of chrysene, 1879, A., 807.
- Graebe, Carl**, and **Heinrich Caro**, constitution of rosaniline, 1874, 275.  
 — rosolic acid, 1876, i., 588.  
 — acridine, 1880, A., 398.
- Graebe, Carl**, and **Rudolf Ebrard**, euxanthone, 1882, A., 1301.
- Graebe, Carl**, and **Wilhelm Knecht**, phenylnaphthylcarbazole, 1880, A., 168, 663.
- Graebe, Carl**, and **Wilhelm Mann**, action of sulphuretted hydrogen on diazobenzene, 1882, A., 1285.
- Graebe, Carl**, and **Carl Mensching**, diphenic anhydride, 1880, A., 812.
- Graebe, Carl**, and **Hermann Schmalzgaug**, diphthalyl, 1882, A., 1298.
- Graebe, Carl**, and **Johann Walter**, picene, 1881, A., 284.
- Graebe, Carl**. See also **Heinrich Brunck**, **Heinrich Caro**.
- Graefe**, blue dyeing, 1873, 422.
- Graeff, Franz**. See **Adolph Claus**.
- Graeff, Friedrich**, naphthalene derivatives, 1881, A., 822; 1882, A., 1212.
- Graeff, Friedrich**. See also **Carl Arnold August Michaelis**.
- Gräber, R.**, Parisian wood varnish, 1873, 307.  
 — preparation of active bone-black, 1873, 424.  
 — free acids in wine, 1873, 659, 957.  
 — a miniature steam boiler explosion, 1873, 1002.
- Grätzel, Adolph**, on creosote and carbolic acid, 1877, ii., 515.



- Grätzel**, *Adolph*, cupitton and pittacal, 1879, A., 253.
- Graham**, *A. McDonald*, on the treatment of filtered anthracene oil, 1876, i., 980.
- effect of aluminium sulphate on sewage, 1877, i., 355.
- Graham**, *Christopher Colborne*. See *Edward Frankland*, *Francis Robert Japp*.
- Graham**, *Norman Child*. See *Henry Edward Armstrong*.
- Grahl**, *Hugo*, experiments on the cultivation of various kinds of beans with special regard to the amount of nutrients produced, 1882, A., 83.
- Grahl**, *Hugo*. See also *Hermann Krockner*.
- Gramp**, *Friedrich*, the relations of affinity of the halogens in their combinations with the metals, 1875, 423.
- estimation of nitric acid, particularly in water, 1875, 912.
- quantitative analysis of cinnabar, 1875, 913.
- action of nitric acid on mercuric sulphide, 1877, i., 282.
- combustion of zinc and cadmium: lecture experiments, 1878, A., 110.
- Grandeau**, *Henry*, and *A. Bouton*, chemical examination of mistletoe, 1877, ii., 211, 636.
- Grandeau**, *Louis*, influence of atmospheric electricity on the nutrition of plants, 1878, A., 908; 1879, A., 818.
- composition of maize, 1880, A., 183.
- manuring experiments with various phosphates at Nancy, 1882, A., 993.
- Grandeau**, *Louis*, and *A. Leclerc*, composition of oats, 1881, A., 116.
- Grandeau**, *Louis*. See also *P. Fliche*.
- Grantham**, *Richard Boxall*, purification and utilisation of sewage, 1874, 100.
- Grassi**, *E.*, estimation of cenocyanin (*onolin*) in wine, 1874, 716; 1875, 484.
- influence of a high temperature on the fermentation of must, 1875, 492.
- Gratama**, *Willem Dignes*, estimation of glucose, 1878, A., 611.
- Grattarola**, *Giuseppe*, hydrocastorite, a new mineral, 1878, A., 119.
- rosterite, a new variety of beryl from Elba, 1881, A., 1009.
- Grawitz**, *Paul*, behaviour of fungi in the animal system. 1881, A., 930.
- Grawitz**, *William Jules Samuel*, nitro-derivatives of alizarin, 1878, A., 737.
- aniline-black, 1878, A., 824.
- Grawitz**, *William Jules Samuel*, action of chromium salts in presence of chlorates, 1879, A., 420.
- improvements in dyeing and printing aniline-black, 1879, A., 422.
- formation of aniline-black by chromate in presence of chlorates, 1879, A., 495.
- Gray**, *James St. Clair*, and *J. B. Lyman*, separation and detection of strychnine in chemico-legal investigations, 1873, 194, 1265.
- Gray**, *Thomas*, variation of the electric conductivity with temperature, density, and chemical composition, 1882, A., 680.
- Green**, *Howard L.*, *Osmorhiza longistylis*, 1882, A., 988.
- Greenaway**, *Alfred John*. See *Richard John Friswell*.
- Greene**, *Francis F.*, extraction of caffeine from guarana, 1877, ii., 627.
- the tannic acid of guarana, 1877, ii., 897.
- *Baptisia tinctoria*, 1880, A., 411.
- Greene**, *William H.*, decomposition of ethyl alcohol by zinc chloride at high temperatures, 1878, A., 655.
- new mode of formation of ethyl oxide, 1878, A., 656.
- preparation of hexamethylbenzene from acetone, 1879, A., 940.
- dioxymethylene; preparation of methylene chloride, 1880, A., 307.
- preparation of bromobenzene and iodobenzene, 1880, A., 316.
- synthesis of saligenol, 1880, A., 318.
- acetobenzoic anhydride, 1880, A., 550.
- Greene**, *William H.*, and *Andrew J. Parker*, note on hyraceum, 1880, A., 172.
- Greene**, *William H.* See also *Joseph Achille Le Bel*.
- Greenish**, *Henry George*, Bidara laut, 1879, A., 1045.
- *Nigella sativa*, 1880, A., 718.
- Cape tea, 1881, A., 441.
- *Nerium odorum*, 1881, A., 916.
- carbohydrates in *Fucus amylaceus*, 1882, A., 939, 1044.
- Gréhan**, *Nestor*, quantitative determination of the carbon monoxide combined with hæmoglobin: elimination of carbon monoxide, 1873, 646.
- absorption of carbon monoxide by the blood, 1878, A., 994.
- Gréhan**, *Nestor*, and *E. Modrzejewski*, decomposition of albuminoid substances in a vacuum, 1874, 1175.

- Greiff, Philipp**, some new colouring matters, 1880, A., 41.  
 — anthranilic acid from *o*-nitrotoluene, 1880, A., 648.
- Greiff, Philipp**. See also **Otto Fischer**.
- Greiner, Adolphe**, definition of steel, 1874, 830.  
 — steel containing phosphorus, 1876, i., 454.
- Grenfell, John Granville**, on super-saturated saline solutions, 1877, i., 436; 1879, A., 501.
- Grenier, M.** See **P. Champion**.
- Gresly, Julius**, and **Franz Meier**, mesitylenephthalic acid, 1882, A., 848.
- Grete, Ernst August**, *m*-bromotoluene, 1874, 986; 1875, 887; 1876, i., 71.  
 — estimation of carbon bisulphide, copper, and caustic alkalis by means of potassium xanthate, 1876, ii., 551; 1877, ii., 929; 1878, A., 341.  
 — estimation of nitric acid as ammonia, 1879, A., 79.  
 — estimation of nitrogen in nitrogenous organic bodies, 1879, A., 80.  
 — formation of nitrites in the soil, 1879, A., 737.  
 — determination of wine extract, 1880, A., 928.
- Grete, Ernst August**. See also **Hans Hübner, Philipp Zöller**.
- Griess, John Peter**, a new series of organic acids, 1873, 72.  
 — derivatives of uramidodracylic acid, 1873, 178.  
 — aromatic amido-acids containing alcohol radicles, 1873, 281, 1145.  
 — *m*-nitrobenzoic acid, 1873, 637; 1875, 892.  
 — action of methyl iodide on diamidobenzoic acid, 1874, 477.  
 — action of nitrous acid on ethylaniline, 1874, 587.  
 — desulphuration of sulphureabenzoic acid (*dicarboxylsulphocarbanilide*), 1874, 905.  
 — new formation of benzocreatine, 1874, 906.  
 — action of nitric and sulphuric acids on *o*-nitrobenzoic acid, 1875, 263.  
 — reduction products of the nitrobenzoic acids, 1875, 460.  
 — diazoamido-compounds, 1875, 463.  
 — aromatic compounds analogous to creatine, 1875, 648, 1031; 1880, A., 803.  
 — cyanophenyl alcohol, 1875, 1261.  
 — *m*-cyananiline, 1876, i., 267.  
 — new mode of synthesis of betaine, 1876, i., 404.
- Griess, John Peter**, action of potassium ferrocyanide on diazobenzene, 1876, i., 932.  
 — decomposition of oxethylcarbinimidamidobenzoic acid by nitrous acid, 1876, ii., 413.  
 — phenolbidiazobenzene and analogous compounds, 1876, ii., 416.  
 — new researches on diazo-compounds: constitution of compounds of diazobenzoic acid, 1877, i., 474; 1882, A., 48.  
 — action of diazo-compounds on tertiary amines, 1877, ii., 454.  
 — *o*-azobenzoic acid, 1878, A., 149.  
 — estimation of nitrous acid by means of *m*-diamidobenzene, 1878, A., 605.  
 — derivatives of benzoic acid, 1879, A., 246.  
 — action of some diazosulphonic acids on phenols, 1879, A., 315.  
 — action of cyanogen on amidobenzoic and anthranilic acids in aqueous solution, 1879, A., 321.  
 — amidobenzoic pereyanide, 1879, A., 466.  
 — remarks on Weselsky's and Benedikt's investigation on some azo-compounds, 1879, A., 629.  
 — action of methyl iodide on asparagine, 1880, A., 315.  
 — action of cyanogen compounds on diazobenzene, 1880, A., 316.  
 — trimethyl-*p*-amidobenzenesulphonic acid, 1880, A., 322.  
 — a new class of ammonium compounds, 1880, A., 636, 637.  
 —  $\beta$ -naphtholdisulphonic and dihydroxynaphthalenedisulphonic acids, 1881, A., 178.  
 — benzdinedisulphonic acid, 1881, A., 428.  
 — action of cyanogen on picramic acid, 1882, A., 969.
- Griesshammer, Oskar**, action of bromine on cane sugar, 1880, A., 795.
- Griessmayer, E.**, reduction of nitrates by bacteria, 1876, ii., 650.
- Griessmayer, Victor**, new reaction of alkalis with tannic acid, 1873, 95.  
 — hop extract, 1873, 659.  
 — glycyrrhizin, or liquorice juice, 1874, 170.  
 — estimation of sulphurous acid in hops, 1874, 191.  
 — studies on the colouring matters of wine, and on wine colouring, 1877, ii., 368.  
 — the peptones of beer worts, 1877, ii., 521.

- Griessmayer, Victor**, estimation of glycerin and hop-resin in beer, 1878, A., 449.
- on the acidity of beer, 1878, A., 541.
- new clarifier for beer, 1880, A., 931.
- valuation of barley, 1881, A., 946.
- Giffin, Charles**, on a new method of supporting crucibles in gas furnaces, 1875, 677.
- Griffiths, Arthur Bower**, origin and formation of the diamond, 1882, A., 1269.
- Grillone, G. B.**, crude butyric acid of fermentation, 1873, 375.
- Grimaux, Edouard**, derivatives of naphthalene tetrachloride, 1873, 69.
- preparation of organic chlorine compounds, 1873, 364.
- the hydrates of the fatty monobasic acids, 1873, 371.
- freezing points of mixtures of acetic acid and water, 1873, 613.
- derivatives of naphthalene trichloride, 1873, 1034.
- a glycerin of the aromatic series, 1873, 1139.
- synthesis of oxalylurea (*parabanic acid*), 1874, 368; 1875, 359.
- bromo-derivatives of pyruvic acid, 1874, 887.
- identity of bromoxaform and pentabrominated acetone, 1874, 1080.
- pyruvic ureides, 1874, 1160; 1875, 358, 359, 449.
- on the pyruvic ureides and the synthesis of a homologue of allantoin, 1875, 358.
- on the pyruvic ureides and the synthesis of parabanic acid, 1875, 359.
- ethyl oxalurate and oxamethane cyanurate, 1875, 564.
- synthetic researches on the uric acid group, 1875, 752; 1876, i., 69; 1877, ii., 740; 1879, A., 375, 460.
- synthesis of allantoin, 1876, ii., 628.
- terephthalic aldehyde, 1877, i., 206.
- tartronic acid, 1877, ii., 740.
- $\psi$ -uric acid, 1879, A., 784.
- new derivative of the parabanic series, 1880, A., 105.
- transformation of morphine into codeine and homologous bases, 1881, A., 829.
- some reactions of morphine and its congeners, 1881, A., 1044.
- ethereal derivatives of morphine, 1881, A., 1045.
- Grimaux, Edouard**, a new series of bases derived from morphine, 1882, A., 218.
- synthesis of nitrogenised colloids, 1882, A., 415.
- action of bromine on quinoline and pyridine, 1882, A., 1215.
- Grimaux, Edouard**, and **Paul Adam**, action of bromine on dichlorhydrin, 1880, A., 99.
- action of bromine on epichlorhydrin, 1880, A., 457.
- synthesis of citric acid, 1880, A., 801.
- derivatives of acrolein, 1881, A., 406.
- chloropropaldehyde, 1881, A., 888.
- dibromopropaldehyde, 1881, A., 1029.
- Grimaux, Edouard**, and **Joseph Tcherniac**, preparation of malonic acid, 1879, A., 782.
- Grimm, Ferdinand**, phthalein of hydroquinone and quinizarin, 1873, 1234.
- Grimmer, H.**, the decrease of nitrogen in malt wort during fermentation, 1881, A., 331.
- Grimshaw, Harry**, on ethylamyl, 1873, 309.
- basic calcium chloride, 1875, 337.
- diisopentyl or diamyl, 1877, ii., 260, 687.
- Grimshaw, Harry**, and **Clifford Grimshaw**, analysis of the water of Thirlmere, 1879, A., 211.
- Grimshaw, Harry**, and **Carl Schorlemmer**, *canthylidic acid* and *n*-heptyl alcohol, 1873, 1073.
- Gripou, Emile**, physical properties of collodion layers, 1875, 726.
- Griswold, William Loomis**. See **Russell H. Chittenden**.
- Grobert, I. von**. See **Henri Pellet**.
- Grodzki, Max**, ethylated thiocarbamides, 1882, A., 823.
- Grodzki, Max**. See also **Gustav Kraemer**.
- Groebe, B.**, and **F. Lürmann**, a gas generator, 1878, A., 349.
- Gröger, Max**, chromium sulphides and the chromosulphites, 1881, A., 225; 1882, A., 15.
- devitrification, 1882, A., 343.
- estimation of neutral fat in mixtures of fatty acids, 1882, A., 1236.
- Gröger, Max**. See also **Alexander Bauer**.
- Groenvik, E.**, the action of chlorocarbonic ether on amidophenol, 1877, i., 472.
- Groll, Adolf Robert Alexander**, *o*-amido-phenetol, 1876, i., 247.

- Groshans, J. A.**, on the nature of the elements, 1873, 132.
- Grosheintz, Heinrich**, preparation of crystallised phosphorous acid, 1877, ii., 701.
- note on the preparation of ethene glycol by Hüfner and Zeller's method, 1877, ii., 875.
- preparation of methylallyl, 1878, A., 562.
- new mode of preparation of allyl bromide, 1878, A., 963.
- tetraallylammonium bromide and triallylamine, 1879, A., 779.
- Grosjean, H.**, analysis of some fodders and observations on the damage caused to Italian beans by the bean insect, 1879, A., 552.
- Grosjean, John Joseph Beaumont Jean-neret**, action of organic acids on minerals, 1877, ii., 358.
- action of tartaric acid on calcium carbonate, 1877, ii., 647.
- on the determination of tartaric acid in lees and inferior argol, with some remarks on filtration and precipitation, 1879, T., 341.
- Gross, Edw. Z.**, chemical constituents of "*Coptis trifolia*, Salisb.," 1874, 912.
- Gross, Theodor**, the electrolytic conductivity of solid salts, 1878, A., 363.
- an experiment with sulphur, 1880, A., 700.
- Grosser, Bruno**, essential oil of the fruit of *Coriandrum sativum*, 1882, A., 525.
- Grossmann, Jacob**, indirect estimation of hyposulphites (*thiosulphates*) and sulphites, 1878, A., 1006.
- softening magnesia-hard water, 1879, A., 985.
- alkalimetric determination of sulphates, 1880, A., 744.
- Grote, August (Freiherr) von.** and **Bernhard Tollens**, levulinic acid, 1875, 250; 1877, ii., 881.
- formation of levulinic acid from dextrose, 1881, A., 410.
- Grote, August (Freiherr) von, Eduard Alexandre Kehrer,** and **Bernhard Tollens**, preparation and properties of levulinic or  $\beta$ -acetopropionic acid, 1881, A., 409.
- Groth, Paul Heinrich**, the mica group, 1875, 541.
- crystalline form and thermoelectric properties of smaltine, 1875, 548.
- determination of the elasticity of regular crystals in different directions, 1876, ii., 42.
- Groth, Paul Heinrich**, symmetrical growth of circular-polarising crystals, 1877, ii., 115.
- cobalt glance, 1880, A., 13.
- cobalt speis, 1880, A., 13.
- manganite, 1880, A., 14.
- Grotte, Hermann**, use of soluble glass in the textile industry, 1877, i., 757.
- Grotthe, Otto**, *m*-iodonitro- and *m*-iod-amido-benzoic acids, 1879, A., 377.
- Grotian, O.** See **Friedrich Kohlrausch**.
- Grouven, Hubert**, conversion of organic nitrogen into ammonia, 1882, A., 1316.
- Groves, Charles Edward**, on the formation of naphthaquinone by the direct oxidation of naphthalene, 1873, 209.
- formation of ethyl chloride and its homologues, 1874, 636.
- determination of nitrogen in carbon compounds, 1880, T., 500.
- Groves, Charles Edward.** See also **John Stenhouse**.
- Groves, Richard H.**, Bornträger's aloes test, 1881, A., 946.
- Grubenmann, Ulrich.** See **Casimir Wurster**.
- Gruber, D.** See **Friedrich Musculus**.
- Gruber, Max**, action of nitrous anhydride on protocatechuic acid, 1879, A., 643.
- influence of borax on the decomposition of proteids, 1880, A., 907; 1881, A., 453.
- elimination of nitrogen from the animal body, 1881, A., 451.
- poisoning by carbonic oxide, 1881, A., 1086.
- Liebig's method of estimating urea and its modifications, 1882, A., 779.
- Gruber, Max.** See also **Hugo Weidel**.
- Grucarevič, S., and Victor Merz**, ketones from aromatic hydrocarbons and acid chlorides, 1873, 635; 1874, 263.
- action of the chlorides of aromatic acids on hydrocarbons, 1873, 1233.
- decomposition of ketones by soda lime, 1874, 264.
- Grübler, Georg**, crystallizable albumin from pumpkin seeds, 1881, A., 625.
- Grüel**, precautions in the construction and use of Döbereiner's platinum lamp, 1874, 929.
- Grüneberg, Hermann**, kieserite, its properties and applications, 1873, 416.
- on potash, 1876, ii., 220.
- preparation of potassium sulphate from the salts of the Stassfurt deposits, 1881, A., 855.



- Grüneberg, Hermann, and Julius Vorster**, manufacture of soda from salt, 1876, ii., 670.
- Grünzweig, Carl**, butyric acid from various sources, 1873, 373.
- Grünzweig, Carl, and Reinhold Hoffmann**, ultramarine crystals, 1876, ii., 382.
- Grützner, Paul**, on some chemical reactions of active and inactive muscles, 1873, 921.
- colorimetric estimation of pepsin, 1874, 609; 1876, ii., 117.
- some unorganised ferments of the animal organism, 1876, ii., 648.
- formation and separation of pepsin, 1877, ii., 204.
- formation and secretion of ferments, 1878, A., 441.
- Gruner, Louis Emmanuel**, Mushet's steel, 1873, 955.
- on the calorific power and classification of coals, 1875, 295.
- analysis of white fumes from a blast furnace near Longwy, 1876, ii., 226.
- artificial pyroxene (*diopside*), 1881, A., 694.
- Grupe, Adolf, and Bernhard Tollens**, action of ammonium citrate on phosphates, 1880, A., 825; 1881, A., 845.
- action of citric acid on phosphates, 1881, A., 759.
- Grupe, Adolf, Bernhard Tollens** (and others), estimation of retrograde phosphoric acids, 1881, A., 62.
- Grye**. See **Bouquet de la Grye**.
- Gscheidlen, Richard**, the chemical reaction of the central organs of the nervous system, 1874, 82.
- sulphocyanates in the urine, 1877, ii., 205.
- estimation of sugar in milk, 1878, A., 345.
- preparation of blood crystals, 1878, A., 518.
- Gscheidlen, Richard**. See also **Moritz Traube**.
- Guareschi, Icilio**, action of chloroform on potassium phenate, 1874, 259.
- action of amides on phenols, 1874, 261, 584.
- observations on cymene, 1874, 684.
- transformation of benzamide into benzylic alcohol and benzoic aldehyde, 1875, 569.
- action of urea on asparagine and aspartic acid, 1875, 1256.
- asparagine and aspartic acid, 1877, i., 457.
- Guareschi, Icilio**, naphthalene derivatives, 1877, i., 712; 1882, A., 734.
- action of sodium on tetrachloromethane and bromobenzene, 1878, A., 126.
- asparagine derivatives, 1878, A., 138.
- abnormal vapour densities, 1878, A., 194.
- carbothialdine and other sulphur compounds, 1878, A., 857.
- ethylenedisulphuric acid, 1879, A., 710.
- podophyllin, 1880, A., 479.
- Gucci, Pietro**. See **Giovanni Angelo Barbaglia**.
- Guébbard, Adrien**, reversibility of the electrochemical method for the determination of equipotential systems, 1882, A., 352.
- theory of the equipotential figures obtained by the electrochemical method, 1882, A., 1156.
- Gümbel, C. Wilhelm (Ritter) von**, Japanese porcelain earth, 1878, A., 559.
- the stone of the "Julius Column," the Lavez rock in the Upper Engadine and the sericite-gneiss in the Bündener Alps, 1879, A., 25.
- phyllite or sericite-gneiss, 1879, A., 207.
- manganese nodules from the bed of the Pacific Ocean, 1880, A., 16.
- fossil plants from the carboniferous strata of the Tarentaise, 1881, A., 390.
- rocks of Kerguelen's Land and the neighbouring islands, 1881, A., 331.
- Günsberg, Rudolf**, contributions to a knowledge of the ammonia-soda process, 1874, 824.
- colorimeter for determining the colour intensity of liquids, 1878, A., 914.
- combustion of the volatile petroleum hydrocarbons in oxygen, 1878, A., 916.
- purification of water containing magnesia, 1878, A., 920.
- Günther, Carl**, a simple method of observing the reversed lines of spectra, 1878, A., 463.
- Günther, Oswald**, analysis of metallic zinc, 1882, A., 553, 776.
- Guérin, Jules**. See **Charles Friedel**.
- Guérin, R.**, contents of the glands of *Rosa rubiginosa*, 1874, 384.
- Gürke, Oskar Hermann Johannes Heinrich**, preparation of bromacetanilide, 1876, i., 400.
- ethylhydroxylamine, 1881, A., 571.



- Gürke, Oskar Hermann Johannes Heinrich**,  $\alpha$ - and  $\beta$ -ethylic dibenzoylhydroxamate and  $\alpha$ - and  $\beta$ -ethylbenzoylhydroxamic acid, 1881, A., 584.
- Guerout, Aug.**, action of sulphurous acid on recently precipitated insoluble sulphides, 1873, 349.
- action of ether on cupric oxide, 1874, 1152.
- influence of temperature on the efflux-coefficient of liquids through capillary tubes, 1875, 329.
- researches on the coefficient of capillarity, 1877, i., 573.
- electrolysis of sulphurous acid, 1877, ii., 820.
- Guerri, Luigi**, iodised albumin, 1873, 512.
- Guhrauer, Fritz**, calcined glass, 1876, i., 123.
- Guichard, Petrus**, crystallized benzoic acid from gum benzoin, 1873, 902.
- action of carbon disulphide on benzoin, balsams and resins, 1875, 762.
- action of carbon disulphide on benzoin, tolu balsam, resins and gum resins, 1876, i., 616.
- *Xanthium spinosum*, 1877, i., 720.
- Guignet, Ed.**, nickeliferous iron from St. Catherine in Brazil, 1877, ii., 851.
- constitution of coal, 1879, A., 602.
- Guillaume, L.**, manurial effects of natural phosphates, 1882, A., 993.
- Guimet, Emile**, the formation of ultramarines and their colorations, 1878, A., 198.
- Guinochet, E.**, aconitines, 1882, A., 717.
- Guiot, Henry**. See *Philippe Henri Arnaud de Clermont*.
- Gukassianz, Paul**, action of oxalic acid on resorcin, 1878, A., 979.
- formation of aurin, 1878, A., 979.
- Guldberg, Cato Maximilian**, and *Peter Waage*, chemical affinity, 1879, A., 580.
- Gundelach, Charles**, some derivatives of isoxylene, 1876, ii., 513.
- a diatomic phenol of xylene, 1878, A., 61.
- Gundelach, Charles**. See also *Arthur Michael*.
- Gundelach, Emile**, a double salt of quinic and acetic acids, 1876, ii., 415, 637.
- Gunning, Jan Willam**, action of yeast on sugar solutions, 1873, 46.
- detection of blood spots, 1873, 298.
- on media free from oxygen, 1878, A., 267.
- experiments on anaerobiosis with putrefaction bacteria, 1878, A., 907.
- Gunning, Jan Willam**, conditions of life of the lower organisms, 1879, A., 664.
- action of alcohol on bacteria, 1879, A., 817.
- ferric chloride as a purifier of water, 1879, A., 1072.
- vital power of Schizomycetes in absence of oxygen, 1880, A., 277.
- Gurit, Adolf**, galena from Engelskirch, 1877, ii., 855.
- Gurnaud, light, shade, and soil** studied in their influence on the growth of forest trees, 1880, A., 566.
- Gustavson, Gabriel**, double decomposition in absence of water, 1873, 588.
- production of sulphuryl chloride from sulphuric anhydride and boron chloride, 1873, 597.
- tetraiodide of carbon, 1874, 881.
- preparation of ethylidene iodide from ethylidene chloride, 1874, 1075, 1153.
- bromination of aromatic hydrocarbons in presence of aluminium bromide, 1877, ii., 599; 1879, A., 142.
- preparation of pentabromotoluene, 1878, A., 48.
- action of bromine on cymene, 1878, A., 49.
- action of aluminium iodide on various organic compounds containing chlorine, 1878, A., 211.
- action of bromine in presence of aluminium bromide on the homologues of benzene, 1878, A., 972.
- compounds of aluminium chloride with benzene and toluene, 1879, A., 308, 461.
- interpretation of reactions occurring in presence of aluminium chloride, 1879, A., 785.
- compounds of cymene with aluminium bromide and chloride, 1879, A., 785.
- reactions of aluminium chloride and bromide with organic compounds, 1880, A., 370; 1881, A., 398.
- action of alcoholic bromides and of hexabromethane on paraffins in presence of aluminium bromide, 1881, A., 399.
- decomposition of the hydrocarbons from American and Caucasian petroleum at a low temperature, 1882, A., 27, 374.
- preparation of aluminium iodide, 1882, A., 364.
- transformation of carbon chlorides into bromides, 1882, A., 375.

**Guthrie, Frederick** salt solutions and attached water, 1875, 333, 530; 1876, i., 336; ii. 169; 1877, i., 36; 1879, A., 428.

**Guthzeit, Max**, octylic acetoacetate and its derivatives 1880, A., 871.

— cetyl- and dicetyl-acetic and malonic acids, 1881, A., 408.

— ethylic salts of ethyl- and isobutyl-chloromalononic acids, ethyl- and isobutyl-tartronic and hydroxyacetic acids, 1882, A., 39.

**Guthzeit, Max**. See also *Carl Adam Bischoff, Max Conrad*.

**Gutknecht, H.** diagnosis of fatty alcohols, 1879, A., 673.

—  $\alpha$ -nitrosopropionic acid, 1880, A., 712.

**Gutzeit, Heinrich Wilhelm**, occurrence of ethyl alcohol in the vegetable kingdom, 1875 1246.

— presence of alcohols and paraffins in plants, 1880, A., 914.

**Gutzkow, F.**, preparation of soda from the sulphate by means of lime and sulphur, 1880, A., 592.

**Guyard, Anthony** ("Hugo Tamm"), the formation of aniline-black by vanadium salts and its theory, 1876, i., 814.

— analysis of gas-lime, 1876, ii., 123.

— analysis of a residue from the manufacture of sodium, 1876, ii., 123.

— extraction of silver by the moist way, 1876, ii., 124.

— on vanadium, 1876, ii., 173.

— silicide of platinum, 1876, ii., 384.

— new method of separating nickel and cobalt, 1876, ii., 550.

— synthesis of phthalic acid, 1878, A., 796.

— Laurent's "carminaphtha," 1879, A., 466.

— action of oxalic acid on chlorates, bromates, and iodates, 1879, A., 593.

— iodated potassium iodide, 1879, A., 595.

— separation and estimation of chlorine, bromine, and iodine 1879, A., 670.

— on copper and ammonium oxyferrocyanide, 1879 A., 775.

— law peculiar to metallic ferrocyanides, 1879, A., 830.

— viscosity, a cause of catalysis 1879, A., 876.

— estimation of  $\text{NO}_2$  and NO as ammonia, 1882, A., 773.

**Guyot, Paul**, deposits of calcium phosphate in the Vosges, 1879, A., 19.

**Guyot, Paul**, and *R. Bidaux*, detection of rosolic acid in presence of fuchsine, 1877, i., 747.

**Gyergyai, Árpád**. See *Pál Plósz*.

## H.

"H., G." See "G. H."

"H., W." potatoes manured with peat, nitrophosphate, and sodium nitrate, 1881, A., 624.

**Haarmann, Wilhelm**, derivatives of salicylic aldehyde, 1873, 907.

**Haarmann, Wilhelm**. See also *Ferdinand Tiemann*.

**Haarstick, F. A.**, examination of beer, 1877, ii., 372.

**Haas, B.**, ripening of grapes, 1879, A., 174.

— sugar in raisins, 1880, A., 932.

— estimation of sulphurous acid in wine, 1882, A., 773.

— detection of magenta, archil, and persic in wines, 1882, A., 1006.

**Haas Hermann** optical and chemical behaviour of certain albuminoid substances, especially dialysed albumin, 1876, ii., 317.

— a levorotatory substance in normal urine, 1877, i., 731.

— properties of albumin containing very small quantities of salts, 1877, ii., 345.

**Haas, Robert**, lecture experiment, 1881, A., 133.

— inflammability of vegetable substances with nitric acid, 1881, A., 771.

**Haas, Robert**. See also *Carl Engler, Ernst Röhrig*.

**Haase, A.** See *Gustav Kühn*.

**Habedanek, H.**, purification of oxalic acid, 1873, 376.

**Habel, Louis**, quantitative estimation of chlorides in urine, 1882, A., 552.

**Habel, Louis**, and *Johann Fernholz*, a new method for the quantitative estimation of chlorides in urine, 1882, A., 551.

**Haberlandt, Friedrich**, the maximum and minimum limits of temperature for the germination of the more important agricultural seeds, 1874, 910.

— cultivation of the rough-haired soja bean (*Soja hispida*, Mönch), 1878, A., 87.

— effect of frost on flax seeds, 1878, A., 802.

— evaporation of water from the ground, 1879, A., 667.

— strength of hemp, 1879, A., 859.

- Haberlandt, Friedrich**, cohesive power of soils, 1879, A., 957.  
 — the most advantageous method of sowing corn, 1880, A., 181.
- Haberlandt, Gottlieb**, winter-colouring of non-deciduous leaves, 1877, ii., 349.  
 — relation of the colour of clover seed to its value, 1880, A., 134; 1881, A., 837.  
 — seed production of red clover, 1880, A., 729.
- Habermann, Josef**, conversion of bromoform into carbon tetrabromide, 1873, 865, 1013.  
 — improved air-bath for heating sealed tubes, 1874, 1056.  
 — oxidation products of starch and paramylum, 1874, 1077.  
 — glutamic acid, 1876, i., 906.  
 — methyl ethers of resorcin, 1877, ii., 474.  
 — glycyrrhizin, 1877, ii., 500; 1879, A., 1040; 1880, A., 671.  
 — a modification of Dumas' method of determining vapour densities, 1877, ii., 697.  
 — dimethylhydroquinone derivatives, 1878, A., 728.  
 — electrolysis of organic substances in aqueous solutions, 1881, A., 215.
- Habermann, Josef**. See also *Heinrich Hermann Christian Hlasiwetz*.
- Habermehl, Heinrich**, composition of magnetic pyrites, 1881, A., 516.
- Haddan, Herbert John**, Baxeres de Torres and Drouin's method of treating ores containing silver and copper, 1879, A., 496.
- Hadelich, Wilhelm**, analysis of white wine from Erfurt, 1882, A., 121.
- Haedicke, H.**, spontaneous ignition of coal, 1881, A., 482.
- Haën, Eugen de**, prevention of boiler incrustations, 1874, 609; 1876, i., 799.
- Hasselbarth, P.**, experiments with barley, 1877, ii., 351.  
 — the best form of nitrogenous food for barley, 1878, A., 805.
- Hasselbarth, P.**, and **J. Fittbogen**, variations in the carbonic anhydride of the atmosphere, 1880, A., 699.
- Hasselbarth, P.** See also **J. Fittbogen**.
- Haesselbarth, Paul**. See **Hans Hübner**.
- Häussermann, Carl**, manufacture of methylaniline, 1879, A., 995.
- Haffer, H.** See **Victor Meyer**.
- Hagemann, Wilhelm**. See **Adolf Mayer**.
- Hagen, A.** See **Carl Theodor Liebermann**.
- Hagen, Ingebrigt Severin**. See **Jacob Worm-Müller**.
- Hagenbach, Eduard**, on the sudden cracking of glass, 1876, ii., 43.
- Hager, Hermann**, testing of crude carbolic acid, 1873, 93.  
 — preparation of pure hydrochloric acid, 1873, 132.  
 — testing of potassium bromide for iodine and chlorine, 1873, 528.  
 — discrimination of gum arabic and dextrin, 1873, 534.  
 — detection of morphine in quinine, 1873, 535.  
 — testing phosphoric acid for phosphorous acid, nitric acid, and arsenic, 1873, 940.  
 — detection of arsenical colours on paper or paper-hangings, 1873, 943, 1057.  
 — testing extracts for copper and tin, 1874, 710.  
 — detection of dextrin in gum arabic, 1874, 715.  
 — removal of arsenic from hydrochloric acid, 1874, 868.  
 — testing for arsenic in sublimed sulphur and washed flowers of sulphur, 1874, 1008.  
 — detection of turpentine in liquid storax, 1874, 1017.  
 — examination of essential oil of mustard, 1874, 1088.  
 — preparation of *Magnesia sulphureosa*, 1875, 1239.  
 — septicine, an alkaloid formed during putrefaction, 1876, i., 405.  
 — irisol, *Oleum Iridis florentinae*, 1876, ii., 104.  
 — testing of quinine salts for strychnine and morphine, 1877, i., 748.  
 — zinc phosphide, 1877, ii., 113.  
 — tannin in gentian root, 1877, ii., 351.  
 — testing of castor oil, 1877, ii., 364.  
 — tests for malt extract, 1877, ii., 373.  
 — new method for the gravimetric estimation of glucose and of mercury, 1878, A., 246.  
 — estimation of salicylic acid, 1878, A., 247.  
 — is beer containing buxine to be regarded as adulterated? 1878, A., 456.  
 — insecticidal constituents in the flowers of *Pyrethrum carneum* and *roseum*, 1878, A., 826.  
 — butter analysis, 1879, A., 81.

- Hager, Hermann**, estimation of alcohol and extractive matter in wine, 1879, A., 179.  
 — testing milk for starch powder, 1879, A., 674.  
 — specific gravities of fats, resins, &c., 1880, A., 70.  
 — separation of magnesium from calcium, iron, and alkalis, 1882, A., 97.  
 — estimation of arsenic, 1882, A., 99.  
 — qualitative and quantitative determination of fusel oil in alcohol, 1882, A., 339.
- Hager, Hermann**, and **Kunstmann**, examination of butter, 1876, i., 967.
- Hahn**. See **Wilhelm Stadel**.
- Haiss, Aug.**,  $\alpha$ -ditolylpropionic acid, 1882, A., 1071.
- Haitinger, Ludwig**, nitrobutylene, 1879, A., 700.  
 — nitro-olefines, 1881, A., 1114.  
 — presence of citric and malic acids in *Chelidonium majus*, 1882, A., 82.
- Hake, Henry Wilson**. See **August Dupré, John Louis William Thudichum**.
- Halberstadt, Wilh.**, action of bromine on *p*-nitrobenzoic acid, 1881, A., 729.  
 — dibromobenzoic acid from *o*-*p*-dinitrobenzoic acid, 1882, A., 183.  
 — preparation of vanadium trichloride, 1882, A., 1268.
- Halberstadt, Wilh.**, and **Moritz Adolf von Reis**, hæmatein, 1881, A., 611.
- Halberstadt, Wilh.** See also **Adolph Claus**.
- Halcrow, (Miss) Lucy**, and **Edward Frankland**, on the action of air upon peaty water, 1880, T., 506.
- Halenke, H.**, Speyer beer, 1880, A., 773.
- Hall, Christopher Webber**. See **Stephen Farnum Peckham**.
- Hall, Lyman Beecher**, isomeric nitro-salicylic acids, 1875, 263.
- Hall, Lyman Beecher**, and **Ira Remsen**, oxidation of mesitylenesulphonic acid, 1877, ii., 777.  
 — oxidation products of cymene-sulphonamide, 1880, A., 257.  
 — oxidation of mesitylene-sulphonamide, 1881, A., 820.  
 — oxidation of para-substitution products of aromatic hydrocarbons, 1882, A., 186.
- Haller, Albin**, action of chromyl dichloride on anthracene, 1877, ii., 494.  
 — iodo-camphor, 1879, A., 329.  
 — cyano-derivatives of camphor, 1879, A., 329.
- Haller, Albin**, cyanocamphor, 1881, A., 1041.  
 — carbonic ether of borneol, 1882, A., 528.  
 — cyanic ether of borneol, 1882, A., 625.  
 — essence of savory, 1882, A., 737.  
 — ethyl cyanomalonate, 1882, A., 1189.  
 — campholurethane, 1882, A., 1213.
- Haller, Albin**, and **Alfred Held**, ethyl acetocyanacetate and its derivatives, 1882, A., 1280.
- Hallmann, Franz**, nitroethane and diazonitrobenzene, 1876, ii., 93.  
 — diethyl- and dimethyl-benzamide, 1876, ii., 418.
- Halloek, Edward J.**, bromonitro- and chloronitro-phenetols, 1881, A., 595.
- Halloek, William**, galvanic polarisation and Smee's element, 1882, A., 1155.
- Halse, William E.**, and **Ignatius Steiner**, crystallised grape sugar, 1877, ii., 730.  
 — optically inactive sugar, 1877, ii., 732.
- Hamberg, Nils Peter**, chemical examination of the air of rooms covered with arsenical wall-paper, 1875, 103.
- Hamburger, Siegfried**. See **Carl Theodor Liebermann**.
- Hamel, F.**, a new red colouring matter from aniline, 1873, 640.  
 — volumetric estimation of oxygen in hydrogen peroxide and other liquids, 1873, 938.
- Hamel Rocs, van**. See **Roos**.
- Hamilton, James C.**, note on the formation of carbon tetrabromide in the manufacture of bromine, 1881, T., 48.
- Hamlet, William Mogford**, on the action of compounds inimical to bacterial life, 1881, T., 326.  
 — estimation of fat in milk, 1881, A., 656.
- Hamlet, William Mogford**, and **Charles Bagge Plowright**, occurrence of oxalic acid in Fungi, 1877, ii., 796.
- Hamm, P. von**, analysis of pennine from Rypfischwäng, 1873, 1114.
- Hammarsten, Olof**, contributions to the theory of the coagulation of fibrin, 1877, i., 726.  
 — lactoprotein, 1878, A., 235.  
 — paraglobulin, 1879, A., 472.  
 — casein and the action of rennet, 1880, A., 171.  
 — fibrinogen, 1880, A., 172.  
 — a new oxidation product of cholic acid, 1881, A., 624.



- Hammer, P.**, apparatus for quick fermentation, 1880, A., 518.
- Hammerbacher, Friedrich**, occurrence of thallium in carnallite, 1875, 734.
- contribution to our knowledge of the milk and fatty kernel of the coconut, 1876, i., 735.
- composition of mixed human saliva, 1882, A., 754.
- Hammerbacher, Friedrich**. See also **Richard Hornberger**.
- Hammerl, Hermann**, freezing mixture of calcium chloride and snow, 1879, A., 689.
- solution of carbonic oxide in an acid solution of cuprous chloride, 1879, A., 887.
- specific heat of concentrated solutions of hydrochloric acid, 1880, A., 207.
- action of water on silicon and boron fluorides; solution of cyanogen in water, 1880, A., 435.
- specific heats of solutions of potash and soda, 1880, A., 435.
- hydration of salts, 1882, A., 1163.
- Hammerschlag, W.**, brominated derivatives of anthracene, 1878, A., 76.
- anthraquinone, oxyanthraquinone, and alizarin-carbonic acids, 1878, A., 323.
- Hammerschlag, W.** See also **Carl Theodor Liebermann**.
- Hampe, Wilhelm**, metallurgy of copper, 1876, i., 973.
- on boron, 1877, i., 273.
- on the determination of cuprous oxide in copper, 1878, A., 608.
- Hampel, Ludwig**, amount of dew on plants, 1880, A., 493.
- effect of manures on the growth of larches and pines, 1880, A., 509.
- Hampton, Frank**, existence and properties of phosphorus pentiodide, 1881, A., 507.
- Hanamann, Joseph**, substitute for malt in brewing, 1876, i., 807.
- composition of Bohemian wines, 1877, ii., 953.
- relation of yield of beet to rain and sunshine, 1880, A., 178.
- composition of Bohemian beer wort determined by chemo-optical processes, 1880, A., 189.
- planting of sugar beets, 1880, A., 502.
- natural phosphates and their value in agriculture, 1880, A., 506.
- manuring of beet-root, 1880, A., 509.
- Hanamann, Joseph**, impoverishment of soils by removal of straw, 1882, A., 991.
- changes effected by cultivation of forest lands, 1882, A., 1129.
- Hanbury, Daniel**, on Calabrian manna, 1873, 284.
- Handl, Alois**, saturated and unsaturated solutions, 1873, 470.
- Handl, Alois**, and **Richard Příbram**, determination of boiling points, 1878, A., 633.
- Handl, Alois**. See also **Richard Příbram**.
- Handwerk**. See **Jäckel-Handwerk**.
- Hanimann, Johann**, action of phosphorus trichloride on dimethylaniline, 1876, ii., 417.
- Hanimann, Johann**, and **Ulrich Hannhart**, desulphurisation of dithiodimethylaniline, 1879, A., 714.
- Hanisch, H.**, formation of boiler incrustations, 1876, ii., 673.
- Hankel, Wilhelm Gottlieb**, the influence of sunlight, etc., on the electrical behaviour of metals dipped in water or saline solutions, 1877, ii., 818.
- on a change in the direction of the polarisation current after the passage of an oppositely directed galvanic current, 1877, ii., 819.
- photoelectric and thermoelectric properties of flintspar, 1878, A., 2; 1881, A., 215, 337.
- direct transformation of radiant heat into electricity, 1880, A., 838.
- development of polar electricity in hemimorphous crystals by alteration of pressure in the direction of the asymmetrical axes, 1881, A., 958.
- Hankó, Wilhelm, Anton Fleischer**, and **Georg Nemes**, modification of Simpson's method for estimating nitrogen, 1879, A., 554.
- Hankó, Wilhelm**. See also **Anton Fleischer**.
- Hanks, Henry G.**, occurrence of duran-gite in the tin ore district of Durango, Mexico, 1877, ii., 719.
- Hannay, James Ballantine**, new processes for mercury estimation with some observations on mercury salts, 1873, 565.
- zirconia, 1873, 703.
- iodine monochloride, 1873, 815.
- sulphur bromide, 1873, 823.
- on the inorganic constituents of sound and diseased potatoes, 1873, 930.
- on a new tellurium mineral, 1873, 989.



- Hannay, James Ballantine**, specific gravity apparatus for temperatures other than atmospheric, 1874, 203.  
 — examination of substances by the time method, 1877, ii., 381; 1879, T., 456.  
 — compounds of calcium sulphate, 1877, ii., 399.  
 — a new process for the volumetric estimation of cyanides, 1878, T., 245.  
 — a new manganese reaction, 1878, T., 269.  
 — action of bromine upon sulphur, 1878, T., 284; 1879, T., 16.  
 — bowlingite, a new Scottish mineral, 1878, A., 15.  
 — new minerals from the collection in the University of Glasgow, 1878, A., 15.  
 — action of iodine trichloride on carbon bisulphide, 1878, A., 833.  
 — on the action of chlorine upon iodine, 1879, T., 169.  
 — examination of substances by the time method; hydrates, 1879, T., 456.  
 — on the artificial formation of the diamond, 1880, A., 707; 1881, A., 1019; 1882, A., 281.  
 — artificial formation of pyrolusite, 1881, A., 353.  
 — absorption of gases by solids, 1881, A., 872, 971; 1882, A., 272.  
 — on the limit of the liquid state, 1881, A., 971; 1882, A., 136.  
 — state of fluids at their critical temperature, 1882, A., 268.  
 — the liquid and gaseous states, 1882, A., 688.
- Hannay, James Ballantine**, and **James Hogarth**, solubility of solids in gases, 1880, A., 210, 693; 1881, A., 970; 1882, A., 271.
- Hannhart, Ulrich**, action of copper on trichlorobenzene, 1879, A., 714.  
 — action of chloroform and perchloromethane on dimethylaniline, 1879, A., 714.  
 — action of copper on benzotrichloride, 1882, A., 1103.
- Hannhart, Ulrich**. See also **Johann Hanimann, Wilhelm Michler**.
- Hanriot, Maurice**, derivatives of glycerol, 1877, ii., 301; 1878, A., 656; 1879, A., 1029.  
 — new method of preparation of isopropyl glycol, 1878, A., 656.  
 — on an isomeride of monochlorhydrin, 1878, A., 657.  
 — trimethylglyceramine, 1878, A., 780.  
 — on glycide, 1879, A., 449.
- Hanriot, Maurice**, action of sodium on epichlorhydrin, 1880, A., 457.  
 — constitution of epichlorhydrin, 1880, A., 457.  
 — action of hydrochloric acid on aldehyde, 1881, A., 404.  
 — *s*-dichlorethyl oxide, 1882, A., 590.
- Hanriot, Maurice**, and **Spiridon Oeconomidis**, metaldehyde, 1882, A., 31.
- Hanriot, Maurice**. See also **E. Doassans**.
- Hansel, Vincenz**, rutile from Modriach, 1878, A., 944.  
 — phosgenite from Monte Ponì, Sardinia, 1879, A., 604.  
 — petrographical constitution of the monzonite of Predazzo, 1881, A., 27.
- Hansen, Emil Chr.**, influence of air on fermentation, 1880, A., 819.  
 — lower organisms in the air, 1880, A., 908.  
 — researches on the physiology and morphology of the alcoholic ferment, 1882, A., 80.
- Hansen, H.** See **Adolph Claus**.
- Hantzsch, Arthur Rudolf**, conversion of  $\alpha$ -naphthylamine into  $\alpha$ -naphthyl methyl ether, 1880, A., 813.  
 — *p*-hydroxyphenol and some aldehydes and alcohols derived from quinol, 1881, A., 166.  
 — action of commercial trimethylamine on  $\beta$ -naphthol, 1881, A., 177.  
 — condensation products from aldehyde-ammonia and ketone derivatives, 1881, A., 1028.
- Harcourt, Augustus George Vernon**, the sulphurous impurity in coal gas, 1873, 299.
- Harcourt, Augustus George Vernon**, and **Frederick William Fison**, continuous process for purifying coal gas from sulphur and ammonia, 1873, 1270.
- Harding, August**, preparation and applications of hydrobromic acid, 1882, A., 138.
- Hardtmuth, Fr.**, ethyl  $\alpha\beta$ -dimethylacetosuccinate and *s*-dimethylsuccinic acid, 1878, A., 782.
- Hardtung, Eduard**. See **Julius Post**.
- Hardy**, adulteration of wax with tallow, 1873, 655.
- Hardy, Ernest**, action of bromine on alcohols, 1875, 245.  
 — jaborandi (*Pilocarpus pinnatus*), 1877, i., 324.
- Hardy, Ernest**, and **François Narcisse Gallois**, active principle of the *Strophantus hispidus*, 1877, ii., 501.
- Hardy, Ernest**. See also **Dujardin-Beaumetz, François Narcisse Gallois, Jules Regnaud**.

- Hargreaves, Andrew Fuller**, spontaneous combustibility of charcoal, 1874, 420.
- Hargreaves, John**, manufacture of sodium sulphate by the direct process, 1881, A., 664.
- Harland, Robert Henry**. See *George William Wigner*.
- Harmsen, W.**, nitro-*m*-xylenesulphonic acid, 1881, A., 49.
- Harnack, Erich**, investigations on the alkaloids of the fly agaric, 1877, ii., 197.
- the basic constituent of dita bark (*Alstonia* or *Echites scholaris*), 1879, A., 332.
- ditaine, 1881, A., 109.
- compounds of copper with albumin, 1882, A., 747.
- Harnack, Erich**, and **Hans Horst Meyer**, researches on the alkaloids of jaborandi leaves, 1880, A., 898.
- Harnack, Erich**. See also *Oswald Schmiedeberg*.
- Harrington, Bernard James**, dawsonite, 1875, 617.
- pyrrhotite from Elizabethtown, Ontario, 1877, i., 285.
- minerals of some of the apatite bearing veins of Ottawa Co., Quebec, 1881, A., 542.
- Harris, William Harry**, obituary notice of, 1874, 1200.
- Harrison, William London**, on the balsam of *Liquidambar styraciflua*, 1876, i., 611.
- Harrow, George Henry Unwin**, on pyrotritaric and carbopyrotritaric acids, products of the action of dilute sulphuric acid on diacetosuccinic ether, 1878, T., 425.
- Harrow, George Henry Unwin**. See also *Henry Edward Armstrong*.
- Hart, Edward**, nitrososulphobenzoic acids and some of their derivatives, 1881, A., 1144.
- Hart, Edward**, and **Ira Remsen**, isomeric sulpho-acids from *p*-nitro-toluene, 1877, ii., 776.
- Hart, Peter**, sulphuretted hydrogen apparatus, 1881, A., 787.
- Hartdegen, A.**, production of the red colour in salting meat, 1880, A., 80.
- Hartenstein, William**, constitution of some glycerin derivatives, 1873, 1217.
- Harting, Pieter**, the pycnometer, a new instrument for determining the variable volume of air and other bodies, 1873, 349.
- on a lightning-tube (fulgurite) found at Elspeet, Gelders, in August 1872, 1875, 1166.
- Hartley, Arthur**. See *Edward Ralph Moritz*.
- Hartley, Walter Noel**, the standardising of acids, 1873, 123.
- behaviour of acetamide with sodium ethylate, 1873, 991.
- a new chromic oxalate and its optical properties, 1874, 250.
- cobalt bromides and iodides, 1874, 501.
- preliminary notice of experiments concerning the chemical constitution of saline solutions, 1874, 651.
- on the colour of cupric chloride, 1875, 206.
- simple method of determining iron, 1875, 410.
- on the presence of liquid carbon dioxide in mineral cavities, 1876, i., 137.
- variations in the critical point of carbon dioxide in minerals, and deductions from these and other facts, 1876, ii., 237.
- observations on fluid cavities, 1877, i., 241.
- on attraction and repulsion of bubbles by heat; and on the constant vibration of minute bubbles, 1877, ii., 271.
- on examination of terpenes for cymene by means of the ultra-violet spectrum, 1880, T., 676.
- on the absorption spectrum of ozone, 1881, T., 57.
- on the absorption of solar rays by atmospheric ozone, 1881, T., 111.
- researches on the relation between the molecular structure of carbon compounds, and their absorption spectra, 1881, T., 153; 1882, T., 45.
- note on certain photographs of the ultra-violet spectra of elementary bodies, 1882, T., 84.
- contributions to the chemistry of cerium compounds, 1882, T., 202.
- the analysis of rhabdophane, a new British mineral, 1882, T., 210.
- Hartley, Walter Noel**, and **Alfred Kirby Huntington**, researches on the action of organic substances on the ultra-violet rays of the spectrum: an examination of the essential oils, 1880, A., 201; 1881, A., 957; 1882, A., 130.
- — absorption of the ultra-violet rays of the spectrum by organic substances, 1880, A., 430.
- Hartmann, M.**, dyeing of straw with aniline-green, 1873, 305.

- Hartmann, Max**, basalts of the Auckland Islands, 1879, A., 903.
- Hartmann, Oscar**, action of sodium-amalgam on chlorodracrylic acid, 1876, i., 256.
- derivatives of *p*-oxybenzoic acid, 1877, ii., 895.
- preparation of propylene glycol, 1878, A., 211.
- Hartsen, F. A. von**, alkaloids from *Isopyrum thalictroides*, 1873, 511.
- stearoptene in the flowers of *Clandestina rectiflora*, 1873, 513.
- researches on chlorophyll, 1873, 513.
- on the chemical characters of the uredo of maize and on some questions of vegetable analysis, 1874, 494.
- contributions to vegetable chemistry, 1874, 705.
- separation and purification of malic acid, 1876, i., 375.
- a new constituent of ivy (*Hedera Helix*), 1876, i., 613.
- researches on the *Eucalyptus Globulus*, 1876, i., 615, 942.
- Hartwig, Ernst C.**, oil of wine, 1879, A., 615; 1881, A., 794.
- Hartwig, F. C.**, compounds of thallium with alcohol radicles, 1874, 675; 1875, 1002.
- Harvey, Alexander**, obituary notice of, 1877, i., 499.
- Harvey, J. W. Chalmers**, incrustation on an old flue, 1876, i., 796.
- Harvey, Sidney**, improvements in the mode of estimating ammonia by the Nessler test, 1873, 1161.
- detection of lead in potable waters, 1881, A., 1173.
- Harz, Karl Otto**, spergulin, a new fluorescent body, 1879, A., 469.
- certain sorts of pumpkin, 1880, A., 184.
- comparative investigation of hops, 1880, A., 417.
- cultivation of the soja bean, 1881, A., 116.
- Hasenbach, C. Wilhelm**, loss of nitric acid in the sulphuric acid manufacture, 1874, 822.
- Hasenclever, Robert Wilhelm**, manufacture of caoutchouc, 1873, 956.
- the loss of zinc in roasting zinc blende, 1876, i., 129.
- manufacture of chlorine by Deacon's process, 1876, ii., 669.
- effect of acid gases on vegetation, 1880, A., 496.
- Hasse, Georg**, action of carbon tetrachloride on substituted phenols in alcoholic solution, 1878, A., 415.
- Hasselt, A. van**, direct determination of soda in potashes, 1880, A., 580.
- Hasselt, W. H. van**. See *F. van Heumen*.
- Hassencamp, Hugo**, a new method of preparing methyl-violet, 1880, A., 75.
- Hassenpflug, Hans**, oxidation of nitrobenzene, 1875, 1188.
- Haswell, Alexander E.**, Volhard's permanganate method of titrating manganese, 1880, A., 585.
- quantitative determination of phosphorus and silicon in iron and steel, 1881, A., 194.
- titration of iron with sodium thio-sulphate, 1881, A., 849.
- Hatton, Frank**, on the action of bacteria on gases, 1881, T., 247.
- on the oxidation of organic matter in water by filtration through various media; and on the reduction of nitrates by sewage, spongy iron, and other agents, 1881, T., 258.
- Hatton, Frank, and William Richard Eaton Hodgkinson**, on the reduction of cinnylic alcohol, 1881, T., 319.
- Hatzfeld, A.**, a new process for preserving wood, 1874, 728.
- Haubst, P.**, a derivative of valerylene, 1876, i., 693.
- volumetric estimation of sulphuric acid in waters, 1877, ii., 917.
- Hauch, Anton**, extraction of copper by means of an acid solution of ferrous chloride, 1877, ii., 934.
- Hauer**. See *Paul Muller*.
- Hauer, Franz (Ritter) von**, the bottle-stone of Trebitsch, 1882, A., 581.
- Haughton, Samuel**, mineralogy of the counties of Dublin and Wicklow, 1881, A., 382.
- Haugk, Fritz**, recovery of gold from toning baths, 1878, A., 178.
- Hausamann, Oskar**, formation of red mercury sulphide, 1875, 1001.
- $\beta$ -naphthoic acid, 1876, i., 599.
- some derivatives of  $\alpha$ - and  $\beta$ -naphthoic acid, 1877, i., 317.
- determination of undecomposed fat in mixtures of fatty acids, 1881, A., 762.
- Haushofer, Karl von**, the mechanical separation of complex crystals, 1873, 1194.
- the constitution of natural silicates, 1874, 27.
- oligoclase from Dürrmorsbach, 1881, A., 386.
- action of acetic acid on dolomite, 1882, A., 659.
- Hausmann, Ulrich**, betulin, 1877, i., 94.

- Hautefeuille, Paul**, chlorovanadates, 1874, 131.  
 — reproduction of albite, 1877, ii., 574.  
 — artificial formation of albite and orthoclase, 1878, A., 15, 205.  
 — crystallisation of silica in the dry way, 1878, A., 645, 704.  
 — new silicates of aluminium and lithium, 1880, A., 447.  
 — production of amphigene, 1880, A., 449.  
 — a new property of vanadates, 1880, A., 527.  
 — two new silicotitanates of sodium, 1880, A., 531.  
 — simultaneous reproduction of quartz and orthoclase, 1880, A., 532.  
 — a potassioferrie silicate analogous to leucite, 1881, A., 389.  
 — crystallisation of cadmium and zinc sulphides, 1882, A., 363.  
 — crystallography of a variety of blende, 1882, A., 369.
- Hautefeuille, Paul, and James Chapuis**, ozone, 1880, A., 847.  
 — — researches on the silent electric discharge, 1881, A., 3.  
 — — liquefaction of ozone, 1881, A., 18, 786; 1882, A., 923.  
 — — nitrification, 1881, A., 221.  
 — — spectra of compound gases and a new compound of nitrogen and oxygen, 1881, A., 221.  
 — — liquefaction of ozone in presence of carbonic anhydride: its colour in the liquid state, 1881, A., 786.  
 — — retrogradation produced by the electric discharge during the conversion of oxygen into ozone, 1882, A., 688.  
 — — pernitric acid, 1882, A., 800, 927.
- Hautefeuille, Paul, and Julien Margottet**, silica and lithium silicates, 1882, A., 278.
- Hautefeuille, Paul**. See also *Louis Paul Caillietet, Louis Joseph Troost*.
- Havenstein, Gustav**, behaviour of natural soils and plants growing in them towards water, 1880, A., 737.
- Havrez, Paul**, mordanting woollens with alum, 1873, 206.
- Havringcourt, (Marquis) d'**, manufacture of nitre from the salts of osmose water, 1882, A., 1012.
- Hawes, George W.**, chemical composition of the wood of *Aerogens*, 1874, 1000.  
 — on a felspar from Bamle in Norway, 1874, 1071.  
 — zonochlorite and chlorastrolite, 1876, i., 193.
- Hawes, George W.**, diabantite, a chlorite occurring in the trap of the Connecticut valley, 1876, i., 348.  
 — the trap rocks of the Connecticut valley, 1876, i., 350.  
 — a lithia-bearing variety of biotite, 1877, i., 56.  
 — the rocks of the chloritic formation on the western border of the New Haven region, 1877, i., 286.  
 — a group of dissimilar eruptive rocks in Campton, New Hampshire, 1881, A., 701.  
 — liquid carbonic anhydride in smoky quartz, 1882, A., 474.  
 — mineralogical composition of the normal mesozoic diabase on the Atlantic Border, 1882, A., 585.
- Hawliczek, Josef**. See *Eduard Lippmann*.
- Hay, William John**, obituary notice of, 1874, 1201.
- Haycraft, John Berry**, preliminary notice of a method for the quantitative determination of urea in the blood, 1882, A., 667.
- Hayduck, Michael Maximilian**, *o*-amidop-toluenesulphonic acid, 1874, 1094; 1875, 461.  
 — a new amidotoluenesulphonic acid, 1875, 1030.  
 — substitution products of hydro-cærulignone, 1876, ii., 516.  
 — determination of starch in pressed yeast, 1881, A., 943.  
 — influence of Rochelle salt on the activity of yeast, 1881, A., 1058.  
 — influence of acids on the formation and activity of yeast, 1882, A., 417.  
 — development of yeast in solutions containing a varying quantity of nitrogen, 1882, A., 761.
- Hayes, Augustus Allen**, the red zinc oxide of New Jersey, 1873, 605.  
 — on the wide distribution of vanadium, and its association with phosphorus in many rocks, 1875, 868.
- Hayes, S. Dana**, lignite from Louisiana, 1875, 242.  
 — the waters of Prince Edward Island, Nova Scotia, 1875, 244.  
 — deposits in boiler tubes, 1875, 294.
- Hayn, Karl (Freiherr) von**. See *Karl (Edler) von Garzarolli-Thurnlackh*.
- Hazard, J.**, formation of soils by weathering, 1880, A., 449.
- Head, Jeremiah**, dephosphorisation of pig iron, 1879, A., 1075.
- Hearder, Jonathan**, obituary notice of, 1877, i., 500.



- Hebenstreet, Carl**, the primary rocks of the Northern Schwarzwald, 1878, A., 208.
- Hebré, Em.** See *Eugène Varenne*.
- Hecht, Otto**, identity of the hexyl compounds from mannite and dulcitol, 1873, 370.
- hexine from mannite, 1878, A., 717.
- oxidation products of  $\beta$ -hexyl iodide, hexylene bromide, and monobromohexylene (derived from mannite), 1878, A., 844.
- oxidation of hexylene from mannite, 1878, A., 961.
- Hecht, Otto**, and *Fr. Wig*, oxidation of mannitol by an alkaline solution of potassium permanganate, 1882, A., 157.
- Hecht, Otto**, and *Joseph Munier*, oxidation of hexylene glycol from mannite, 1878, A., 966.
- ischeptoic acid from  $\beta$ -hexyl iodide, 1879, A., 140; 1882, A., 40.
- Hecht, Otto**, and *Julius Straus*, *n*-hexylene, 1874, 782.
- Heckel, Edouard**, oil from the kernel of *Aleurites triloba*, 1876, i., 98.
- influence of salicylic acid, thymol, and some essential oils on germination, 1879, A., 172; 1880, A., 335.
- Heckel, Edouard**, and *Charles Frédéric Schlagdenhauffen*, analysis of kola nuts, 1882, A., 1125.
- Heckel, Edouard, J. Mourson**, and *Charles Frédéric Schlagdenhauffen*, composition of Globularia, 1882, A., 1224.
- Heddlé, Matthew Forster**, an analysis of a crystal of desmine of unusual form from the Faröe Islands, 1878, A., 278.
- manganese garnet, 1880, A., 856.
- haughtonite, a new mica, 1881, A., 385.
- substances which may prove to be new minerals, 1882, A., 288.
- Heeren, Friedrich**, extraction of saccharine juice from beetroot, 1874, 397.
- to make iron wire of silvery whiteness, 1875, 672.
- solution of caoutchouc, 1877, i., 363.
- Hehner, Otto**, a simple method of Nesslerising, 1876, ii., 326.
- birch-water, 1877, ii., 212.
- notes on water analysis, 1878, A., 334.
- action of potassium chlorate on the system, 1878, A., 633.
- the influence of chloroform on nitrification, 1879, A., 395.
- Hehner, Otto**, determination of phosphoric acid as phosphomolybdate, 1879, A., 482.
- examination of Pavy's method of determining glucose, 1879, A., 834.
- mineral constituents of cinnamon and cassia, 1880, A., 360.
- Heiden, Joachim Christian Eduard**, composition and feeding value of clover at different stages of growth, 1873, 649.
- feeding experiments with sophisticated cattle salts, 1873, 649.
- feeding of pigs, 1875, 1278.
- on the products of tissue metamorphosis contained in the faeces of pigs, and their influence on the results of digestion experiments, 1878, A., 524.
- on the supply of nitrogen to plants, 1879, A., 739.
- nitrogen manure for oats, 1880, A., 741.
- Heidenhain, Rudolf Peter Heinrich, Arthur Henry**, and *Paul Wollheim*, the pancreatic juice of Herbivora, 1877, ii., 204.
- Heidepriem, F.**, feeding experiments with sheep, 1873, 519.
- on the relation between the quantity of starch contained in potatoes and their relative density; and a new table for calculating the percentage of starch contained in potatoes from their specific gravity, 1877, ii., 233.
- Heilmann, J. J.**, hai-thao, a new substance used for finishing cotton materials, 1876, i., 981.
- Heim, Rudolf.** See *Adolf Weber*.
- Heindl, Joh. Bapt.**, crystalline compounds of calcium chloride with alcohols, 1882, A., 27.
- Heine, F.**, cultivation of several varieties of potatoes, 1881, A., 301.
- new English kinds of wheat, 1881, A., 1065.
- experiments on potatoes and sugar beet with potassium sodium nitrate, 1882, A., 771.
- Heine, H.** See *Carl Engler*.
- Heine, Karl**, sulphoisophthalic acid and the corresponding hydroxyisophthalic acid, 1880, A., 549.
- Heinemann, Carl**, analysis of the luminous organs of the Mexican Cucúyos, 1873, 924.
- Heinrich**, estimation of dextrose and inverted sugar in presence of saccharose, 1879, A., 180.
- Heinrich, Reinhold**, influence of manures on weeds, 1873, 934.



- Heinrich, Reinhold**, on the power of plants to deprive the soil of water, 1875, 1278.
- artificial manures, 1879, A., 1050.
  - experiments on thin and thick seed sowing, 1882, A., 329.
  - amount of ammonia absorbed by hydrochloric acid from the air, 1882, A., 798.
- Heintz, Arnold**, on the respiration of beetroot and the air enclosed in it, 1873, 1050.
- lecture experiment on osmose, 1874, 1132.
  - estimation of sugar in beetroot, 1875, 288, 667.
  - Chinese porcelain manufacture, 1876, ii., 671.
- Heintz, E.**, detection of organic poisons, 1878, A., 613.
- Heintz, Wilhelm Heinrich**, changes in the position of the hydrogen atoms on the carbon skeleton of organic bodies, 1873, 152.
- diethylidenelactamic and nitroso-diethylidenelactamic acids, 1873, 268; 1880, A., 801.
  - on the coagulation of casein by rennet and on the so-called amphoteric reaction, 1873, 514.
  - a polyacetone, 1874, 145.
  - preparation of alanine by potassium cyanide, and simultaneous formation of lactylurea, 1874, 149.
  - note on the estimation of phosphoric acid, 1874, 915.
  - ammonia derivatives of acetone, 1874, 1080; 1875, 351.
  - action of heat on diacetoneamine, 1875, 566.
  - composition of the platinum compounds of dehydrotriacetoneamine, 1875, 885.
  - on diacetone alcohol, 1876, i., 365.
  - triacetoneamine and some of its salts, 1876, i., 382.
  - on a fourth acetone base, *isotriacetoneamine*, 1876, i., 383.
  - regeneration of diacetoneamine from triacetoneamine, and formation of a fifth acetone base, 1876, ii., 292.
  - dehydrotriacetoneamine, 1877, i., 591.
  - a sixth acetone base, 1877, i., 592.
  - alcohol bases formed by the hydrogenation of di- and tri-acetoneamine, 1877, i., 592.
  - a new platinum salt containing two ammonium bases, 1877, i., 592.
  - nitrosotriacetoneamine, 1877, ii., 428.
- Heintz, Wilhelm Heinrich**, reducing action of bone charcoal at low temperatures, 1877, ii., 582.
- production of phorone from nitrosotriacetoneamine, 1877, ii., 583.
  - decomposition of nitrosotriacetoneamine by acids, 1877, ii., 583.
  - diacetoneamine and vinylidiacetoneamine, 1877, ii., 878.
  - action of hydrocyanic acid upon diacetoneamine chloride, 1877, ii., 878.
  - cause of the formation of vinylidiacetoneamine, 1878, A., 483.
  - butter analysis (Hehner's method), 1878, A., 611.
  - benzaldiacetoneamine, 1879, A., 54.
  - vanillodiacetoneamine, 1879, A., 144.
  - triacetoneamine chromates, 1880, A., 101.
  - products of oxidation of di- and tri-acetoneamine, particularly amidodimethylacetic, amidodimethylpropionic, and imidodimethylacetodimethylpropionic acids, 1880, A., 101.
  - urea platinochloride, 1880, A., 104.
  - triacetonediamine, 1881, A., 420.
  - an acetone base containing sulphur, 1881, A., 420.
  - obituary notice of, 1881, T., 181.
- Heintzel, Carl**, cement testing, 1878, A., 617.
- Heinzelmann, Gustav**, derivatives of benzene-*m*-disulphonic acid, 1877, ii., 771; 1878, A., 409.
- estimation of the value of raw material in the preparation of yeast, 1880, A., 833.
- Heinzelmann, Gustav**, and **Ludwig Spiegelberg**, pentabromobenzenesulphonic acid, 1879, A., 802.
- Heinzelmann, Gustav**. See also **Max Delbrück**.
- Heinzelmann, Robert**, dehydromucic acid, 1879, A., 141.
- Heinzerling, Christian**, mineral tanning, 1880, A., 427.
- Heisch, Charles**, analyses of cocoa, 1877, ii., 212.
- products of combustion of coal gas, 1877, ii., 948.
  - diseased milk, 1878, A., 684.
- Heiss, Ernst**, can inorganic constituents be withdrawn from the bones by the introduction of lactic acid into the intestines? 1877, i., 216.
- Heitzmann, Carl**, action of lactic acid on animals, 1874, 593.
- Helbig, W.**, new process in the manufacture of caustic soda, 1873, 414.

- Helbing, K.**, investigation of a new fossil resin, 1875, 46.  
 — investigation of the first products obtained in the manufacture of benzene, 1875, 49.
- Held, Alfred.** See **Albin Haller**.
- Helkenberg, Emil.** See **Ferdinand Tiemann**.
- Hell, Carl**, synthesis of a diethyl suberate, 1873, 495.  
 — occurrence of a fatty acid in beech wood tar paraffin, 1881, A., 249.  
 — new method of brominating organic acids, 1881, A., 711.
- Hell, Carl, and Otto Hermanns**, lignoceric acid, 1881, A., 249.
- Hell, Carl, and Edward Lauber**, formation of crotonic acid, 1874, 837.
- Hell, Carl, and Emil Medinger**, occurrence and composition of acids in petroleum, 1875, 248.  
 — oxidation of an acid contained in crude petroleum, 1877, ii., 432.
- Hell, Carl, and Otto Mühlhäuser**, a crystalline compound of bromine and acetic acid, acetic acid dibromide, 1878, A., 289.  
 — catalytic action of carbon bisulphide on mixtures of bromine and acetic or formic acid, 1878, A., 401.  
 — addition product of acetic acid with bromine and hydrochloric acid, 1879, A., 705.  
 — addition product of acetic acid with bromine and hydrobromic acid, 1879, A., 705.  
 — action of bromine on acetic acid, 1879, A., 705.  
 — action of finely divided silver on ethyl monobromobutyrate, 1880, A., 542.  
 — acids of the formula  $C_6H_{11}O_4$  derived from bromobutyric acid, 1880, A., 543.
- Hell, Carl, and Paul Schoop**, dibromocapric acid, 1879, A., 521.  
 — aniline residues, 1879, A., 715.
- Hell, Carl, and Friedrich Urech**, rate of substitution of bromine in the acetic acid series, 1880, A., 539.  
 — new compound of carbon with sulphur and bromine, 1882, A., 706.  
 — action of bromine on carbon bisulphide, 1882, A., 945.  
 — diagnosis of tertiary alcohols, 1882, A., 1040.
- Hell, Carl, and Adolf Waldbaur**, action of alcoholic potash on monobromobutyric acid, 1877, ii., 313.
- Hell, Carl, and August Wittekind**, synthesis of tetramethylsuccinic acid, 1874, 683.
- Hell, Carl.** See also **Friedrich Gantter**.
- Helland, Amund**, two pseudomorphoses, 1873, 356.  
 — composition of the olivine and serpentine of Snarum, 1873, 607.
- Hellesen, W.**, the effect of heat on voltaic circuits completed by an electrolyte, 1877, i., 429.
- Hellon, Robert, and Friedrich Ludwig Alphonso Oppenheim**, ethyl propionylpropionate, 1877, ii., 439.
- Helm, Otto**, on *Monas prodigiosa*, and the colouring matter derived from it, 1876, i., 737.  
 — chemical and physical properties of amber, 1878, A., 323; 1879, A., 390, 896.  
 — gedanite, a new fossil resin, 1879, A., 300.  
 — on asphalt and other retinalites, 1879, A., 301.  
 — composition of coal, 1882, A., 931.
- Helmhacker, Rudolf**, minerals of the clay group, 1881, A., 540.
- Helmhacker, Rudolf.** See also **Jos. Vála**.
- Helmholtz, Hermann Ludwig Ferdinand von**, galvanic precipitation of platinum, 1873, 463.  
 — on galvanic polarisation in liquids free from gas, 1874, 644.  
 — account of researches by E. Root concerning the permeation of platinum by electrolytic gases, 1877, ii., 161, 271.  
 — on the modern development of Faraday's conception of electricity, 1881, T., 277.
- Helms, A.**, derivatives of *n*-cetanthylic acid, 1876, i., 374.
- Helpenstein, J.** See **Adolph Claus**.
- Hemilian, Valerius von**, preparation of sulphobutyric acid, 1873, 747.  
 — preparation of organic sulphoacids, 1873, 1021.  
 — determination of the constitution of the isomeric crotonic acids, 1874, 682.  
 — synthesis of triphenylmethane and methylphenyldiphenylmethane, 1875, 152.  
 — the presence of ethyl alcohol in crude wood-spirit, 1875, 1001.  
 — reduction of dinitrophenol, 1876, i., 918.  
 — a new hydrocarbon obtained from the highest boiling portions of American petroleum, 1877, ii., 867.

- Hemilian, Walerius von**, synthesis of diphenylenephnylmethane and diphenylenetolylmethane, 1878, A., 431; 1881, A., 434.
- constitution of the hydrocarbon derived from chlorotriphenylmethane, 1878, A., 738.
- synthesis of naphthyldiphenylmethane, 1880, A., 664.
- diphenyl-*p*-xylylmethane and diphenylnaphthylmethane, 1881, A., 434.
- Hemilian, Walerius von**, and **N. Melnikoff**, function of sulphurous acid when employed for the saccharification and subsequent alcoholisation of grain, 1873, 304.
- Hemilian, Walerius von**, **Dmitri I. Mendeléeff**, and **Józef Jerzy von Boguski**, compression of gases by low pressures, 1877, i., 32.
- Hemilian, Walerius von**. See also **Dmitri I. Mendeléeff**.
- Hempel, Carl**, oxidation products of terpin, 1875, 632; 1876, i., 921.
- on terpenylic acid, a new product of the oxidation of turpentine, 1875, 762.
- Hempel, Walther**, the salicylic acid question, 1876, i., 711.
- estimation of sulphuric acid in natural waters, 1876, i., 742.
- an arrangement for essentially accelerating filtration with the air-pump, 1876, ii., 553.
- simultaneous determination of carbon, hydrogen, and nitrogen in elementary analysis, 1879, A., 278.
- estimation of hydrogen in gaseous mixtures, 1879, A., 670.
- fractional combustion of hydrogen and marsh gas, 1879, A., 747.
- limit of detection of carbonic oxide, 1879, A., 1063.
- estimation of nitroglycerol in dynamite, 1881, A., 472.
- apparatus for fractional distillation, 1882, A., 551.
- absorption of oxygen by metallic copper, 1882, A., 551.
- decomposition of silicates by bismuthic oxide, 1882, A., 552.
- solubility of gases in absorption liquids, 1882, A., 1132.
- solubility of gases in vulcanised caoutchouc, 1882, A., 1132.
- estimation of nitrous oxide, 1882, A., 1132.
- preservation of vulcanised caoutchouc, 1882, A., 1152.
- Hengefeld, G. J.**, effect of feeding-cakes on milk production, 1880, A., 725.
- Henneberg, Johann Wilhelm Julius**, amount of carbonic acid in atmospheric air, 1873, 595.
- consumption of water by animals, 1873, 929.
- analysis of superphosphates, 1874, 710.
- fat-forming equivalent of albuminoids, 1877, ii., 347.
- determination of fibrin, 1879, A., 835.
- Henneberg, Johann Wilhelm Julius, Ernst Kern**, and **H. Wattenberg**, fattening of sheep, 1879, A., 811.
- duration and composition of the increase in live weight of lambs when fattening, 1881, A., 450.
- Henneguy, L. Félix** (and others), contributions to the phylloxera question, 1882, A., 888.
- Hennig, R.**, quantitative analysis by spectrum observations, 1874, 495.
- preparation of artificial champagne, 1878, A., 542.
- preparation of black leather varnish and of varnished leather, 1878, A., 827.
- Henniges, A.**, preparation of anthraquinone by the action of chloride of lime solution and a metallic salt on anthracene, 1877, i., 360.
- Henninger, Arthur**, crystallised glycerin, 1876, i., 695.
- researches on the peptones, 1878, A., 802, 989.
- presence of glycol in wine, 1882, A., 1249.
- Henninger, Arthur**, and **Joseph Achille Le Bel**, an improved apparatus for fractional distillation, 1874, 1133; 1875, 128.
- Henninger, Arthur**. See also **Georges Vogt**.
- Henrichsen, S.**, specific heat of water, 1879, A., 1002.
- Henrici, Friedrich Christoph**, action of solid bodies on supersaturated solutions, 1873, 347.
- Henriot**. See **Camichel**.
- Henriques, Robert**. See **Paul Friedländer**.
- Henrivaux, J.**, devitrification of glass, 1873, 244.
- colouring of glass by insolation, 1873, 463.
- Henry, Arthur**. See **Rudolf Peter Heinrich Heidenhain**.
- Henry, Louis**, ethyloxyoxalyl chloride, 1873, 264.

- Henry, Louis**, monochloroacetone, 1873, 379.  
 — cyanocarbonic ether, 1873, 381.  
 — the nitrite of ethylglycollic acid, 1873, 879.  
 — methylene acetochloride, 1873, 1117.  
 — propargyl derivatives, 1873, 1123; 1874, 977.  
 — remarks in connection with Bisschopinek's investigation on the volatility of the cyanides of negative radicles, 1873, 1129.  
 — dipropargyl, 1873, 1215; 1881, A., 565.  
 — derivatives of glycerin, 1874, 351, 1078; 1875, 345.  
 — derivatives of diallyl, 1874, 456; 1875, 51.  
 — chlorhydrins, 1874, 457.  
 — addition products of the allyl compounds with hypochlorous acid, 1874, 679.  
 — preparation of hydrocarbons of the acetylene series, 1874, 975.  
 — lactide, 1874, 978.  
 — addition products of hypobromous acid and allyl derivatives, 1874, 978.  
 — the alcoholic derivatives of chloral, 1874, 979.  
 — the chlorobromopropionic acids, 1874, 980.  
 — sulphocyanocarbonic acid and its derivatives, 1875, 57.  
 — dibromacrolein, 1875, 143.  
 — note on the compound formed by the direct union of propylene and hypochlorous acid, 1875, 443.  
 — constitution of the acids of the citric group, 1875, 1176.  
 — propylenemonochlorhydrin, 1875, 1179.  
 — products obtained by the action of hypochlorous acid upon non-saturated compounds, particularly propene, 1876, ii., 284.  
 — on *isobutene* chlorhydrate, 1876, ii., 397.  
 — constitution of the propylene-chlorhydrins and law of absorption of hypochlorous acid, 1876, ii., 620.  
 — theory of the formation of ethers of organic acids by means of hydrochloric acid, 1878, A., 286.  
 — dichloropropionic acid (*a correction*), 1878, A., 290.  
 — constitution of diallyl, 1878, A., 962.  
 — a new unsaturated hexavalent hydrocarbon, diallylene  $C_6H_8$ , 1879, A., 34.
- Henry, Louis**, on the addition of oxygen to unsaturated compounds, 1880, A., 231.  
 — dry distillation of sodium trichloracetate, 1880, A., 236.  
 — spontaneous oxidation of nitro-lactic acid, 1880, A., 237.  
 — allyl iodide and monobromallyl alcohol, 1881, A., 567.  
 — action of hypochlorous acid on propargylic compounds, 1881, A., 1120.  
 — pyruvic alcohol and its derivatives, 1881, A., 1121.  
 — action of hypochlorous acid on chlorallyl chloride, 1882, A., 1039.
- Henry, Louis d'**, use of the sodium monochromatic light to appreciate the changes of colour of litmus in alkalimetry, 1873, 935.
- Hensen, Victor von**, analysis of supposed chyle from a lymphatic fistula, 1875, 902.
- Hensgen, Carl**, action of dry hydrogen chloride on sulphates, 1877, i., 439; ii., 110; 1879, A., 105.  
 — on Deacon's chlorine process, 1878, A., 551.  
 — action of hydrochloric acid on double sulphates, 1879, A., 105.  
 — potassium and ammonium ferric chromates, 1879, A., 887; 1880, A., 10.
- Henshaw, J. Andreas**. See *Francis Humphreys Storer*.
- Hepp, Eduard**, action of monochloraldehyde on benzene, 1874, 368.  
 — synthesis by dehydration: derivatives of monochloraldehyde and aromatic hydrocarbons, 1875, 361.  
 — a compound of trichloroacetic chloral and benzene, 1875, 362.  
 — azophenetol, 1878, A., 59.  
 — a new mode of formation of hydroquinone, 1878, A., 62.  
 — aldehyde compounds, 1878, A., 66.
- Hepp, Eduard**, and *Gustav Spiess*, some aldehyde compounds, 1877, i., 314.
- Hepp, Eduard**. See also *Guido Goldschmidt*.
- Hepp, Paul**, trinitrobenzene, 1876, ii., 76.  
 — some addition products of trinitrobenzene and other nitro-compounds, 1879, A., 50.  
 — oxidation of di- and tri-nitrobenzene, 1881, A., 261.
- Hepperger, J. von**, influence of concentration of the solutions on the electromotive force of Daniell's cell, 1881, A., 335.



- Heraeus, Wilhelm C.**, determination of water and fat in milk, 1878, A., 755.  
 — examination of cinnamon and pepper, 1878, A., 823.
- Héraud, A.**, new voltaic element with constant current, 1879, A., 426.
- Herbst, Edgar Carl Louis**, examination of chocolate, 1882, A., 1139.
- Hercher, R.**, determination of nitrous acid and organic matters in potable waters, 1877, ii., 647.
- Hercher, R.** See also *Paul Wagner*.
- Herez, Moritz**, behaviour of certain ketones to oxidizing agents, 1876, i., 377; 1877, ii., 425.
- Hergt, Otto**, action of concentrated hydrochloric acid on citric acid at a high temperature, 1874, 457.
- Hering, C. A.**, recovery of antimony, 1879, A., 491.
- Herlant, A.**, black hellebore root, 1882, A., 1125.
- Herman, W. Douglas**, preparation of phosphorus crystals, 1874, 869.
- Hermann, Ludimar**, the thermoelectric force of zinc and solution of zinc sulphate, 1877, ii., 271.  
 — on milk, 1882, A., 759.
- Hermann, Rudolph**, constitution of Shepard's hermannolite, 1876, ii., 491.  
 — atomic volume and specific gravity of organic compounds, 1876, ii., 496; 1878, A., 637, 697.  
 — researches on the metals of the tantalum group, and on neptunium, a new metal, 1877, ii., 166.  
 — specific gravity and atomic volume of the cerium metals, 1879, A., 579.
- Hermanns, Otto**. See *Carl Hell*.
- Herold, F.**, *o*-anisidine derivatives, 1882, A., 1287.
- Herold, Hugo**, on kaolin from the middle variegated sandstone of Thuringia, 1876, i., 530.
- Heron, John**. See *Horace T. Brown*.
- Herrburger, A.**, adulteration of albumin, 1874, 723.
- Herrera, Alphonse**, a new process for the preparation of extracts without heat, 1877, ii., 949.
- Herrmann, Felix**, action of alkali metals on ethyl succinate, 1877, ii., 319.  
 — a new formation of salicylic acid, 1877, ii., 485  
 — the problem of estimating the number of isomeric paraffins of the formula  $C_nH_{2n+2}$ , 1880, A., 605.  
 — ethyl succinosuccinate, 1882, A., 712.
- Herroun, Edward Felix**, on the synthetic production of urea from benzene, ammonia, and air, by the action of heated platinum, 1881, T., 471.  
 — volumetric estimation of antimony in presence of tin, 1882, A., 661.
- Hertel, Albert**. See *Adolph Claus*.
- Hertel, Johann**, preparation and derivatives of colchicine, 1882, A., 74.
- Herter, Erwin**, action of fused potash on glycerin, 1878, A., 966.  
 — tension of oxygen in arterial blood, 1879, A., 811.  
 — the pancreatic secretion of man, 1882, A., 753.
- Herter, Erwin** (and others), researches on the pancreatic secretion, 1882, A., 753.
- Herter, Erwin**. See also *Eugen Baumann, Carl Friedländer*.
- Herter, M.**, method of preserving brewers' grains, 1881, A., 951.
- Herth, Robert**, chemical nature of peptones, 1879, A., 660.  
 — synthesis of biguanide, 1881, A., 896.
- Hertz, Julius**, shellac and sarcosinic acid, 1877, i., 479.  
 — estimation of silver, chlorine, bromine and iodine by ammonium thiocyanate, 1879, A., 973.
- Hertz, Julius**. See also *Eduard Reichardt*.
- Herwig, Hermann**, expansion of overheated vapours, 1873, 242.  
 — wearing away of the electrodes in the production of the electric arc, 1874, 429.  
 — resistance of a galvanic circuit, 1875, 529.  
 — the movements of electrified mercury, 1877, i., 677; 1878, A., 191.  
 — electric resistance of liquids under high pressures, 1877, ii., 161.  
 — the quantity of electricity necessary for the complete charge of a platinum water cell, and the distance between the molecules of liquid water, 1879, A., 194.
- Herzen, Alexandre**, influence of boric acid on acetous fermentation, 1880, A., 819.
- Herzfeld, Alexander**, action of diastase on starch paste, 1880, A., 310; 1881, A., 1024.  
 — acetylation of some carbohydrates, 1880, A., 619.  
 — malto-dextrin, 1880, A., 866.
- Herzfeld, Alexander**, and *Carl Feuerlein*, estimation of reduced or precipitated phosphates, 1881, A., 940.



- Herzfeld, Hermann**, derivatives of p-oxybenzaldehyde, 1878, A., 65, 423.
- Herzfeld, Hermann**. See also **Ferdinand Tiemann**.
- Herzig, Josef**, two new isomerides of cyanuric acid, 1879, A., 517.
- action of sulphuric acid on mono-, di-, and tri-bromobenzene, 1882, A., 46.
- biuret cyanurate, 1882, A., 167.
- trigenic acid, 1882, A., 168.
- phenol-o-sulphonic acid, 1882, A., 407.
- constitution of guaial, 1882, A., 593.
- Herzig, Josef**. See also **Ludwig (Ritter) Barth von Barthenau, Guido Goldschmiedt**.
- Hess, Chr.**, amidetolnene sulphydrates, 1881, A., 596.
- Hess, Filipp**, analysis of blasting oils, 1875, 288.
- burnishing of iron, 1877, i., 114.
- Hess, Filipp**, and **Johann Schwab**, action of alcoholic soda on etheric nitro-compounds, 1878, A., 130.
- Hess, G. vom**. See **Rohl**.
- Hess, Richard**, effect of manures on growth of larches and pines, 1880, A., 509.
- Hesse, H.**, refining copper, 1879, A., 989.
- Hesse, Oswald**, notes on hydroquinone and analogous substances, 1873, 386.
- the alkaloids of cinchona bark, 1873, 914; 1878, A., 155, 434; 1880, A., 328; 1882, A., 1113.
- santoninic acid, 1874, 272.
- remarks on the opium bases, 1874, 484.
- detection of iodide in potassium bromide, 1874, 601.
- *Cinchona Calisaya* of Java, 1875, 282, 909.
- testing quinidine sulphate, 1875, 918.
- testing conchimine (*conquinine*) sulphate, 1875, 918.
- opianine, 1876, i., 607.
- remarks on the symbol ( $\alpha$ ) of the specific rotatory power, 1876, i., 667.
- quinicine and cinchonine, 1876, i., 668.
- compounds of hydrosulphocyanic acid with the more important cinchona alkaloids, 1876, ii., 312.
- phenol compounds of the cinchona alkaloids, 1876, ii., 313, 639.
- aricine and allied substances, 1876, ii., 315.
- Hesse, Oswald**, cynanchol, 1876, ii., 641; 1878, A., 800.
- carbonous acid, 1877, ii., 896.
- alkaloids contained in the red poppy, 1878, A., 157.
- constituents of Pereiro bark, 1878, A., 433; 1880, A., 675.
- the quinidine of Henry and Delondre, 1878, A., 433, 801.
- codeine reaction, 1878, A., 688.
- euphorbone, 1878, A., 800.
- alkaloids of Sabadilla seeds, 1878, A., 802.
- phytosterin and cholesterin, 1878, A., 850.
- on phlorose, 1878, A., 851.
- conquinine sulphate, 1878, A., 938; 1879, A., 656.
- remarks on Rice's article on the cinchona alkaloids, 1879, A., 71.
- substitutes for quinine, 1879, A., 71.
- remarks on cinchonine and cinchonidine, 1879, A., 71.
- lotur bark, 1879, A., 73.
- amyryn and icacin, 1879, A., 73.
- alkaloids of *Alstonia constricta*, 1879, A., 269, 332; 1881, A., 623.
- test for quinine, 1879, A., 280.
- test for quinidine, 1879, A., 281.
- behaviour of potassium thiocyanate with some of the quinine alkaloids, 1879, A., 281.
- cinchotenicine, 1879, A., 332.
- paricine and aricine, 1879, A., 1044.
- amidomethyleneprocatechols, 1880, A., 248.
- Californian orcella weed, 1880, A., 255.
- quinamine, 1880, A., 270; 1881, A., 922.
- quinic acid, quinone and allied compounds, 1880, A., 317.
- caroba leaves, 1880, A., 671.
- morphine hydrochloride, 1880, A., 673.
- the official test of quinine and water of crystallization of quinine sulphate, 1881, A., 63.
- calycin, 1881, A., 180.
- relation of echitamine to ditaine, 1881, A., 184.
- cinchonine, 1881, A., 288.
- cinchonidine and homocinchonidine, 1881, A., 291; 1882, A., 228.
- the bark of *Aspidosperma Quabracho*, 1881, A., 294.
- optical estimation of cinchonidine in commercial quinine, 1881, A., 315.

- Hesse, Oswald**, bark of *Alstonia spectabilis*, 1881, A., 447.  
 — alkaloids from dita bark, 1881, A., 448.  
 — constitution of some alkaloids of the cinchona bark, 1881, A., 615.  
 — propionylquinine, 1881, A., 620.  
 — new platinumchlorides of cinchona alkaloids, 1881, A., 922.  
 — cinchamidine, 1881, A., 1045.  
 — methyl ether of morphine, 1881, A., 1153.  
 — conquinamine, 1881, A., 1156.  
 — fresh occurrence of aricine and cusconine, 1882, A., 317.  
 — phytosterin and *p*-cholesterin, 1882, A., 729.  
 — the quebracho drugs from the Argentine Republic, 1882, A., 742.  
**Hesse, Oswald**. See also *Julius von Jobst*.  
**Hesse, W.**, determination of carbon dioxide in air, 1878, A., 605; 1879, A., 78.  
 — quantitative estimation of dust in workshops, 1881, A., 761.  
**Hessenberg, Friedrich**, on perovskite from Wildkreuzjoch, Pitschthal, 1873, 857.  
 — calespar from Röðefjord, Iceland, 1873, 857.  
**Hessert, Julius**, determination of carbonic acid in carbonates, 1875, 1050.  
 — analysis of the sulphur spring of Bir Kerawi, in the Lybian Desert, 1875, 1168.  
 — phthalic aldehyde, 1878, A., 66.  
 — phthalide (*phthalic aldehyde*) and meconin, 1878, A., 419.  
 — phthalyl alcohol, 1879, A., 631.  
**Hesz, J. J.**, electro-brass plating, 1880, A., 425.  
**Hétet, Fréd.**, purification of the greasy water from surface condensers, 1878, A., 351.  
 — *Sorraecnia purpurca*, 1879, A., 541.  
**Heubel, Emil**, nicotine in tobacco smoke, 1873, 760.  
 — action of dehydrating agents on the crystalline lenses of the eye, 1880, A., 333.  
**Heumann, Karl**, chlorinated azo-derivatives of benzene, 1873, 167.  
 — action of copper on ammonium sulphides, 1873, 1105.  
 — lecture experiments on combustion, 1873, 1186.  
 — preparation of euprous chloride, 1874, 872.  
 — the alteration of cinnabar by light, 1874, 963.  
**Heumann, Karl**, desulphuration of cinnabar at low temperatures, 1874, 963.  
 — formation and decomposition of metallic sulphides, 1875, 41.  
 — compounds of mercuric sulphide, 1875, 132.  
 — action of eupric chloride on mercuric sulphide, 1875, 132.  
 — deterioration of the colour of vermilion by contact with copper and brass, 1875, 673.  
 — theory of luminous flames, 1875, 1149; 1876, ii., 377; 1877, i., 43, 265; ii., 106.  
 — the distance between flame and burner, 1876, i., 36.  
 — apparatus for demonstrating the manufacture of sulphuric acid, 1877, i., 438.  
 — silver ultramarine, 1877, ii., 572; 1878, A., 113; 1879, A., 437.  
 — action of alkaline haloids upon ultramarine, 1877, ii., 707.  
 — potassium ultramarine, 1879, A., 692.  
 — some ultramarine compounds, 1880, A., 217, 367; 1881, A., 351.  
 — nomenclature of some azo-compounds, 1881, A., 163; 1882, A., 1061.  
 — action of the air in rendering the flame of the Bunsen lamp non-luminous, 1881, A., 773; 1882, A., 129.  
**Heumann, Karl**, and *Paul Köchlin*, behaviour of sulphuric monochloride with some elements, 1882, A., 927.  
 — formation of acid chlorides by aid of sulphuric monochloride, 1882, A., 1185.  
 — reactions of sulphuryl chloride, 1882, A., 1262.  
**Heumann, Karl**. See also *Arthur Calm*.  
**Heumen, F. von**, and *W. H. von Hasselt*, manufacture of yeast, 1877, i., 119.  
**Heut, G.**, observations on the composition of steeped barley, 1882, A., 761.  
**Heut, Gottlieb**, pencedanin and its products of decomposition, 1875, 772.  
**Heuze, F.**, preparation of gelatin, 1873, 1070.  
**Heyden, Friedr. von**, application of salicylic acid in domestic economy, 1878, A., 456.  
 — preservation of meat, 1879, A., 996.  
**Heyer, Carl**, oxidation of cane sugar, 1882, A., 1041.  
**Heymer, Th.** See *Otto Wallach*.  
**Heyne, Hermann**, action of hydrochloric acid on ketones, 1875, 762.

- Heynsius, Adrian**, the albuminous compounds of the serum of the blood and of the white of egg, 1875, 469; 1876, ii., 208.
- on cholecyanin and choletelin, 1875, 901.
- estimation of albumin in animal fluids, 1875, 918.
- albumin and its compounds, 1876, i., 718.
- Heyward, Benjamin Huger**, a zinc-bearing clay from the neighbourhood of the Bertha zinc mine, Pulaski Co., Virginia, 1882, A., 24.
- presence of ammonia in human saliva, 1882, A., 78.
- Hibsch, Josef Emanuel**, some methods for the estimation of sulphur in iron, 1877, ii., 799.
- Hicks, Henry**, occurrence of phosphates in the Cambrian rocks, 1875, 872.
- Hidden, William Earl**, meteorite from Cleberne Co., Alabama, 1881, A., 394.
- a new meteoric iron from North Carolina, 1881, A., 1017.
- notes on mineral localities in North Carolina, 1881, A., 1109.
- meteoric iron from Whitfield Co., Georgia, 1882, A., 153.
- Hidegh, Koloman**, chemical analysis of Hungarian fahlores, 1881, A., 360.
- Higgin, Alfred F.**, dibenzanilides, 1879, A., 716.
- dibenzoylaniline and its isomerides, 1882, T., 132.
- Higgin, Alfred F.** [See also *Charles Frederick Cross*.
- Higgin, James**, and **John Stenhouse**, treatment of waste liquors from dye-works, 1875, 676.
- Hight, G. A.**, notes on some experiments made with a view to ascertain the practical value of a proposed method of determining the mineral strength of soils by means of water-culture, 1877, i., 156.
- Hilgard, Eugene Woldemar**, on soil analyses and their utility, 1873, 298.
- silt analysis of soils and clays, 1874, 1103.
- silt analyses of Mississippi soils and subsoils, 1874, 1104.
- aggregation of small particles, 1881, A., 970.
- Hilger, Albert**, chemical constituents of the eggs of reptiles, 1873, 924.
- titaniferous iron ore of abnormal composition, 1874, 134.
- abnormal constituents of urine after eating asparagus, 1874, 595.
- Hilger, Albert**, solubility of selenium and tellurium in sulphuric acid, 1874, 654.
- determination of iodine in urine, 1874, 717.
- detection of phosphate and oxalate of calcium in the ammonium sulphide group, 1875, 102.
- detection of selenous and tellurous acids, 1875, 103.
- on the ripening of grapes, 1875, 281.
- magnesium selenite, 1875, 533.
- occurrence of lithium in the sedimentary rocks, 1875, 734.
- analysis of a serous effusion, 1875, 776.
- mineral constituents of the Echinodermata and Tunicata, 1875, 903.
- chemical composition of the loess formation, 1875, 1240.
- combinations of several alkaloids with iodine, 1876, i., 404.
- testing the purity of chemical preparations, 1876, i., 442.
- detection of albumin in urine, 1876, i., 445.
- detection of biliary acids and bile-pigments in the urine, 1876, i., 446.
- hesperidin, 1876, i., 709.
- the detection of adulterants in food, 1876, i., 766; ii., 329; 1877, ii., 232.
- detection of foreign colouring matters in red wines, 1877, i., 751; ii., 938.
- analyses of the brown coal of the Bauersberg near Bischofsheim on the Rhine, 1877, ii., 850; 1878, A., 202.
- analyses of zinckenite, tetrahedrite, trachyte, and magnetic pyrites, 1877, ii., 853.
- analysis of a trachyte from Wollerslingen in the Westerwald, 1878, A., 208.
- mineral constituents of horseradish, 1878, A., 1000; 1879, A., 819.
- solanine and the products of its decomposition, 1879, A., 541.
- detection of ethyldiacetic acid in urine, 1879, A., 560.
- chemical composition of the soils of the vine-growing districts of the Rhine and Maine, 1879, A., 737.
- composition of "grains" from malt, 1879, A., 761.
- mineral constituents of the Riesling grape, 1880, A., 342.
- analyses of minerals and rocks, 1880, A., 856.

- Hilger, Albert**, and **Richard Bischoff**, colouring matter of the Caryophyllaceae, 1879, A., 730; 1880, A., 413.
- Hill, Alfred**, estimation of tannin in tea, 1881, A., 1176.
- Hill, Henry Barker**, methylic acid, 1876, ii., 75.
- derivatives of uric acid, 1876, ii., 509.
- some products of the distillation of wood at low temperatures, 1877, ii., 746.
- pyroxanthin, 1878, A., 517; 1882, A., 306.
- disubstitution derivatives of acrylic acid, 1879, A., 616.
- mucobromic acid, 1881, A., 36.
- structure of disubstituted acrylic acids, 1881, A., 1030.
- production of furfural by the dry distillation of wood, 1882, A., 296.
- Hill, Henry Barker**, and **Clement Walker Andrews**, dibromacrylic and tribromopropionic acids, 1881, A., 1030; 1882, A., 1186.
- Hill, Henry Barker**, and **Charles Frederic Mabery**, tetrasubstitution derivatives of propionic acid, 1881, A., 1029.
- substituted acrylic acids from bromopropionic acid, 1881, A., 1124.
- Hill, Henry Barker**. See also **William Zebina Bennett**, **Oscar Roland Jackson**, **Charles Frederic Mabery**.
- Hill, Samuel Alexander**, the constituent of the atmosphere which absorbs radiant heat, 1882, A., 566.
- Hille, poisoning of fowls with pumpkin seeds**, 1879, A., 1046.
- Hillebrand, William Francis**, the specific heats and atomic weights of cerium, lanthanum and didymium, 1877, i., 50.
- Hillebrand, William Francis**, and **Thomas Herbert Norton**, metallic cerium, lanthanum and didymium, 1876, ii., 276.
- Hillebrand, William Francis**. See also **Rudolph Fittig**.
- Hilt, Carl**, composition and technical properties of coals, 1873, 1269.
- Himes, Charles Francis**, preparation of photographic dry plates by desensitizing and resensitizing the silver compounds, 1875, 194.
- Kimly, Carl Friedrich August**, new method of determining the melting points of metals and also of bad conductors of heat, 1876, ii., 594; 1877, ii., 162.
- detection of oiled wheat, 1880, A., 929.
- Himmelmann, P.** See **Adolph Claus**.
- Hindenlang, C.**, metaphosphoric acid as a test for albumin, 1882, A., 110.
- Hinman, C. W.**, volumetric determinations by chromic acid, 1878, A., 607.
- Hinrichs, Gustavus Detlef**, molecular rotation of gases, 1873, 838.
- on the boiling points and molecular volumes of the isomeric chloro-derivatives of the ethylic series, 1873, 1014.
- boiling points of the chlorinated derivatives of toluene, 1875, 728.
- Hinterberger, Friedrich**, excretion, 1873, 919.
- Hinteregger, Franz**, diffusion experiments with acid solutions of mixtures of salts, 1880, A., 89.
- Hinteregger, Franz**. See also **Richard L. Maly**.
- Hintz, Ernst** chromium dioxide, 1874, 133.
- Hintze, Carl**, chemical composition of leadhillite, 1875, 546.
- Hinze, H.**, peculiar oxidation of aluminium, 1878, A., 471.
- Hinze, H.** See also **Carl Jehn**.
- Hiortdahl, Thorstein Hallager**, crystalline form of the stannomethyl compounds and their homologues, 1879, A., 518.
- a new metal discovered by T. Dahll, 1879, A., 890.
- piperidine salts; quinine sulphate and selenate, 1880, A., 51.
- mineral analyses, 1881, A., 698.
- Hiriakoff, M.**, examination of a meteorite found in the neighbourhood of Berdjansk, 1879, A., 445.
- Hirn, Gustave Adolphe**, on the apparent variability of the law of Dulong and Petit, 1873, 587.
- optical properties of flame and of incandescent bodies: temperature of the sun, 1874, 526.
- Hirsch, A.**, quinonechlorimide and similar substances, 1881, A., 163.
- Hirsch, B.**, on distillation of acetic acid, 1871, 1026.
- investigation of *Balsamum antarthiticum indicum*, 1879, A., 262; 1880, A., 168.
- Hirsch, Robert**, the so-called dichlorazophenol, 1879, A., 315.
- Hirschberg, A.**, the prevention of mould in solutions of gum, 1873, 100.
- boric acid as a preservative for milk and beer, 1873, 100; 1876, i., 413.
- Ransome's new artificial stone, 1873, 416.
- purification of cocoa-nut oil, 1876, i., 824.



- Hirschsohn, Edward**, contributions to the chemistry of the most important resins, gums and balsams, 1878, A., 158.
- detection of wax, 1880, A., 763.
- comparative experiments on the behaviour of thymol and phenol with different reagents, 1881, A., 942.
- Hirschwald, Julius**, transformation of old timbering into lignite in the rubbish of the Dorothea mine at Clausthal in the Upper Harz, 1874, 670.
- gas apparatus for quantitative analysis, 1877, ii., 215.
- the growth and twin development of diamond crystals, 1878, A., 201.
- crystal system of leucite, 1880, A., 16.
- Hittorf, Johann Wilhelm**, proof of the statement that "electrolytes are salts": a reply to L. Bleekrode, 1879, A., 1.
- Hjelt, Edward Immanuel**, presence of arsenic in the sulphuric acid manufactured from arseniferous pyrites, and in the various soda salts manufactured from this sulphuric acid, 1878, A., 173.
- action of ammonia on ethyl camphoronates, 1880, A., 669.
- caryophyllin, 1880, A., 670.
- action of water on ethyl malonate at a high temperature, 1881, A., 155.
- dioxyadipic acid, 1881, A., 256.
- a neutral bromide from diallyl-malonic acid, 1881, A., 577.
- action of water on isobromocaproic acid, 1882, A., 944.
- action of hydrobromic acid and bromine on diallylacetic acid, 1882, A., 946.
- caprolactone, 1882, A., 946.
- dilactones, 1882, A., 946.
- boiling points of lactones, 1882, A., 947.
- action of bromine on allylmalonic acid, 1882, A., 947.
- oxypropylmalonic acid and its lactone, 1882, A., 948.
- Hjelt, Edward Immanuel**. See also **Rudolph Fittig**.
- Hlasiwetz, Heinrich Hermann Christian**, oreoselone, 1874, 802.
- phloroglucin anhydride, 1875, 256.
- the identity of pyrogenetic acid and hydroquinone, 1875, 1191.
- Hlasiwetz, Heinrich Hermann Christian**, and **Josf Habermann**, glutamic acid, 1873, 512.
- proteids, 1874, 172, 379, 702.
- Hlasiwetz, Heinrich Hermann Christian**, and **Josf Habermann**, gentisin, 1875, 572; 1876, ii., 83.
- on arbutin, 1876, i., 78; ii., 198.
- Hlasiwetz, Heinrich Hermann Christian**, and **J. Kachler**, new derivatives of sulphocarbamic acid, 1873, 265, 628.
- action of carbon sulphide on various amides, aldehydes, and alcohols, 1873, 497.
- Hlasiwetz, Heinrich Hermann Christian**, and **Hugo Weidel**, oxidation products of some of the alkaloids, 1873, 1041.
- peucedanine and oreoselone, 1875, 256.
- Hobler, Francis Helvetius**, obituary notice of, 1877, i., 501.
- Holbrecker, F.**, reduction products of nitracetamide compounds, 1873, 173.
- Hobson, Arthur S.**, obituary notice of, 1877, i., 504.
- Hoch, K.**, carbon chlorides, 1873, 361.
- Hochstetter, Ferdinand Christian (Killer) von**, covellin occurring as encrusting pseudomorph on a bronze Celtic axe found on the Salzberg near Hallstatt, 1881, A., 227.
- Hock, Karl**, spectra of certain alkaloids and glucosides, 1882, A., 349.
- Hock, M.**, manufacture of alabaster, milk-, bone-, cryolite-, and opal-glass, 1877, ii., 946.
- Hodges, John P.**, petrified wood of Lough Neagh, 1875, 48.
- composition of tea and tea soils from Cachar, 1875, 181.
- composition of the fibre of the jute plant, and its use as a textile material, 1875, 199.
- Hodges, N. D. C.**, on salts of hydroxyl-urea and double salts of other hydroxamates, 1877, i., 69.
- Hodgkin, John**. See **David Howard**.
- Hodgkinson, William Richard Eaton**, reducing action of phosphine, 1876, ii., 479.
- $\psi$ -sulphocyanogen, 1877, i., 195.
- action of aluminium iodide upon glycerin, 1877, ii., 300.
- action of sodium on the benzyl ether of isobutyric acid, 1878, T., 495.
- preliminary notice on the action of sodium on some ethereal salts of phenylacetic acid, 1880, T., 481.
- Hodgkinson, William Richard Eaton**, and **Henry Clifton Sorby**, *Pigmentum nigrum*, the black colouring matter of hair and feathers, 1877, i., 127.



- Hodgkinson, William Richard Eaton.**  
See also *Max Conrad, Frank Hatton, William Henry Perkin, junior.*
- Högbom, Arvid Justaf.** fluo-salts of tellurium, 1881, A., 223.
- Höglund, Otto Magnus.** See *Per Theodor Cleve.*
- Hönig, Max.** dimethylresorcin derivatives, 1878, A., 727.  
— estimation of ammonia by sodium hypobromite, 1878, A., 914.  
— action of oxalic and sulphuric acids on naphthol, 1881, A., 280.  
— new isomeride of gluconic acid, 1881, A., 893.
- Hönig, Max, and Max Rosenfeld.** grape sugar, 1877, ii., 303.  
— sugars, 1879, A., 449.
- Höpfner, C.** the rock of Monte Tajumbina in Peru, 1881, A., 1015.
- Hörler, H.** petroleum, 1880, A., 199.
- Hoermann, Josef von.** action of hydrocyanic acid on epichlorhydrin, 1879, A., 449.  
—  $\alpha$ - $\beta$ -dichloroacetone, 1881, A., 248.  
— new colouring matters, 1882, A., 1067.
- Hoermann, Otto.** See *Carl Theodor Liebermann.*
- Hoff, Jacobus Henricus van't.** a new synthesis of propionic acid, 1874, 111.  
— cyanoacetic acid, 1875, 251.  
— cyanoacetic and malonic acids, 1875, 357.  
— structural formulae, 1875, 862.  
— identity of styrolene and cinnamene, 1876, i., 703; 1877, i., 214.  
— the volatile oil from styrax, 1877, i., 478.  
— Ladenburg's benzene formulae, 1877, ii., 190.  
— the border plain, a contribution to our knowledge of etherification, 1877, ii., 418.  
— carbon chlorobromide from trichloroacetic acid, 1877, ii., 422.
- Hofferichter, P.** synthesis of ketone acids, 1880, A., 35.
- Hoffmann, Arthur.** formation of hippuric acid in the kidneys, 1878, A., 442.
- Hoffmann, Ed.** the determination of nitric acid in waters, 1876, i., 435.  
— hesperidin, 1876, ii., 420.  
— aurantiin and murrayin, 1876, ii., 421.  
— on sodium compounds of salicylic acid, 1878, A., 499.  
— testing orange-flower water, 1878, A., 542.  
— naringin, 1879, A., 468.
- Hoffmann, Friedrich Albin.** See *Rudolf Böhm.*
- Hoffmann, G. Christian.** Canadian minerals, 1881, A., 525, 515.
- Hoffmann, Heinrich Carl Hermann.** recent investigations on ferment spores, 1874, 1001.  
— honey-dew, 1877, ii., 210.  
— influence of annual temperature on change of colour in leaves, 1880, A., 910.
- Hoffmann, Meinhard.** See *Otto Wallach.*
- Hoffmann, Reinhold.** ultramarine 1879, A., 108.
- Hoffmann, Reinhold.** See also *Carl Grünzweig.*
- Hoffmeister, George Bernard.** See *Matthew Moncrieff Pattison Muir.*
- Hoffmeister, Wilhelm.** nutritive value of the *Elaeocarpus*, 1880, A., 500.  
— deportment of various phosphates in the soil, 1882, A., 550.
- Hofmann, Alfred.** the chrome ores of Hungary, 1874, 450.
- Hofmann, August Wilhelm von.** preparation of phosphonium iodide, 1873, 842.  
— propenediamine, 1873, 881.  
— the phosphines of the propyl, butyl, and amyl series, 1873, 882.  
— formation of phosphines with the aid of reduction processes, 1873, 883.  
— phosphinic acids, 1873, 883.  
— violet derivatives of rosaniline, 1873, 913.  
— cerulignone, 1874, 174.  
— lecture experiments; oxidising power of charcoal; oxidation shown by change of colour in compounds on contact with air; liquid phosphoretted hydrogen; point of maximum density of water; sodium press; Leidenfrost's experiment reversed to show the action of alkali metals on water, 1874, 764.  
— synthesis of the essential oil of *Cochlearia officinalis*, 1874, 792.  
— crotonyl mustard oil, 1874, 792.  
— essential oil of *Tropaeolum majus*, 1874, 792.  
— essential oil of *Nasturtium officinale*, 1874, 792.  
— methylaniline, 1874, 807.  
— synthesis of aromatic monamines by intramolecular atomic change, 1874, 807.  
— occurrence of phenylenediamine as a bye-product in the manufacture of aniline, 1874, 1096.  
— diphenylguanidine, 1875, 87.  
— essential oil of *Lepidium sativum*, 1875, 170.

- Hofmann, August Wilhelm von**, tetraphenylmelamine, 1875, 466; 1878, A., 300.
- mustard oils (sulphocarbimides), 1875, 564.
- creosote from beechwood, 1875, 568.
- mesidine, 1875, 571.
- cosin, 1875, 571.
- the lifework of Liebig in experimental and philosophic chemistry, with allusions to his influence on the development of the collateral sciences and of the useful arts:—the Faraday Lecture, March 18, 1875; 1875, 1065.
- determination of vapour densities in the Torricellian vacuum, 1877, i., 33; 1879, A., 196.
- oxidation of aromatic acetanines, 1877, i., 90.
- xylidines, 1877, i., 92.
- chrysoidin, 1877, ii., 326, 457.
- contributions to the history of vapour density determinations, 1877, ii., 570; 1879, A., 196.
- action of hydrogen sulphide on the isonitriles, 1877, ii., 604.
- preparation of monomethylaniline, and experiments on the action of methyl chloride, bromide, and iodide on aniline, 1877, ii., 604.
- the polythiohydrates of strychnine, 1877, ii., 789.
- a new dye-stuff, 1878, A., 78.
- preparation of thiamides, 1878, A., 396.
- triatomic phenols from beechwood tar and the origin of cerulignone, 1878, A., 417.
- remarks on Bernthsen's paper on the action of phosphorus pentasulphide on acid amides, 1878, A., 585.
- ethylic ethers of pyrogallie acid and the cedriret of the ethyl series, 1878, A., 869.
- colouring matters from pyrogallie ethers, 1878, A., 871.
- modified vapour density determination, 1879, A., 196.
- formation of methyl aldehyde, 1879, A., 219.
- angelylthiocarbimide, 1879, A., 712.
- piperidine and piperine, 1879, A., 733.
- action of phosphorus pentachloride on thiocarbimides, 1879, A., 805.
- pittacal and eupitonic acid, 1880, A., 164.
- methylpyrogallol and the formation of pittacal, 1880, A., 248.
- action of sulphur on phenylbenzamide, 1880, A., 386.
- Hofmann, August Wilhelm von**, a series of aromatic bases isomeric with the thiocarbimides, 1880, A., 387.
- transformation of methyl thiocyanate at high temperatures, 1880, A., 797.
- amidophenyl mercaptans or thiohydralines, 1880, A., 884.
- hexamethylbenzene, 1881, A., 260.
- estimation of small quantities of carbon bisulphide, 1881, A., 308.
- action of heat on the ammonium bases, 1881, A., 570, 745.
- action of heat on amines, 1881, A., 621.
- pyridine bases, 1881, A., 921.
- action of bromine in alkaline solution on amides, 1882, A., 822, 950, 1052.
- preparation of amides of monobasic acids of the paraffin series, 1882, A., 950.
- Hofmann, August Wilhelm von**, and **Adolf Geyger**, action of sodium on chlorinated nitro-compounds, 1873, 168.
- Hofmann, August Wilhelm von**, and **Wilhelm von Miller**, cresol derivatives, 1881, A., 592.
- Hofmann, Karl Berthold**, the spectra of phosphoretted hydrogen and ammonia, 1873, 340.
- Hofmann, Panajota Wilhelm**, utilising the iron of pyrites residues, 1876, i., 119.
- preparation of sulphur from pyrites, 1877, ii., 235.
- spontaneous ignition of hydrogen by finely-divided zinc, 1878, A., 769.
- Hofmeister, Franz**, proofs of the presence of carbamic acid in animal fluids, 1876, ii., 318.
- on amido-acids, 1878, A., 40, 42.
- on lactosuria, 1878, A., 442.
- complete precipitation of albumin from animal fluids, 1879, A., 183.
- regeneration of albumin from peptone, 1879, A., 950.
- chemical structure of collagen, 1881, A., 294.
- peptone in the blood, 1882, A., 78.
- bodies in urine precipitable by phosphotungstic acid, 1882, A., 755.
- Hofmeister, Victor**, effect of artificial addition of phosphates to the food of lambs, 1873, 1153.
- influence of the addition of fat to the food on its digestibility, 1874, 83.
- feeding experiments with meat flour on pigs, 1874, 595.

- Hofmeister, Victor**, experiments on the feeding of sheep with meat flour, 1876, i., 722.  
 — digestion of cellulose, 1882, A., 237.
- Hofmeister, Victor**. See also *Wilhelm Ellenberger, Otto Alexander Siedamgrotzky*.
- Hogarth, James**. See *James Ballantine Hannay, Edmund James Mills*.
- Hogg, Thomas W.**, condition of carbon in steel and the effect of hardening upon it, 1881, A., 478.
- Hoglan, Phil.**, stability of calomel, 1881, A., 512.
- Holden, Friedrich**, amount of albuminoids in potatoes, 1880, A., 568.  
 — some analyses of starchmakers' residues, 1880, A., 595.  
 — analyses of pond slime, 1881, A., 61.  
 — linseed cake and linseed meal, 1881, A., 636; 1882, A., 519.  
 — preservation of stable manure in deep stalls, 1882, A., 333.
- Holden, Louis H.**, *Aradus spinosa*, 1881, A., 105.
- Holdermann, Eugen**, presence of ammonia in tartrates, 1878, A., 92.  
 — on hydrochloric acid containing phosphoric acid, 1879, A., 8.  
 — iron albuminates, 1879, A., 170.
- Holland, Philip**, estimation of sulphur in pyrites, 1873, 530.
- Holliday, Thomas**, Grawitz's improvements in dyeing and printing aniline-black, 1879, A., 122.
- Holloway, John**, a new application of rapid oxidation by which sulphides are utilised for fuel, 1879, A., 755.
- Holmes, Edward Morrell**, chemical constituents of *Gelsemium sempervirens*, 1876, i., 941.
- Holst, Leopold**. See *Julius Post*.
- Holthof, Carl**, simple suction arrangement for rapid filtering, 1877, i., 508.  
 — determination of phosphorus in pig iron and iron ores, 1877, ii., 800.
- Holtz, Wilhelm**, some remarkable phenomena with flames, 1881, A., 489.
- Holzbecher, Hermann**, influence of oxygen on the clarifying of beer, 1881, A., 951.
- Holzhauser, William C.**, *Eriodictyon californicum*, 1881, A., 105.
- Holzner, Georg** (and others), researches on beer, 1879, A., 1079.
- Homann, Friedrich Wilhelm**, quercite, a pentad alcohol, 1878, A., 399.
- Homburg**, preparation of carbolic acid paper, 1873, 424.
- Homeyer, Ignaz**, the essential oil of *Eucalyptus Globulus*, 1876, i., 211.
- Homeyer, Ignaz**. See also *August Faust, Carl Theodor Liebermann*.
- Hommey, aniline-black** by means of vanadium salts, 1878, A., 356.
- Hoogewerff, Sebastiaan, and Willem Arne van Dorp**, oxidation of nitrogenous compounds by potassium permanganate, 1878, A., 297, 973.  
 — oxidation of quinine by potassium permanganate, 1879, A., 541, 946.  
 — oxidation of quinoline, 1879, A., 731.  
 — pyridinecarboxylic acids, 1880, A., 405; 1881, A., 741.  
 — pyridinetricarboxylic acid from cinchona alkaloids, 1880, A., 106.  
 — behaviour of the cinchona alkaloids with potassium permanganate, 1880, A., 895.  
 — lepidine, 1881, A., 109.  
 — pyridine- and methylpyridine-carboxylic acids, 1881, A., 611.  
 — behaviour of cinchononic acid on heating, 1882, A., 311.
- Hoorn, testing of butter** for adulterations, 1873, 1064.
- Hoorweg, Jan Leendert**, thermic theory of electricity, 1881, A., 70, 777.
- Hopkinson, John**, the electrostatic capacity of glass, 1881, A., 963.  
 — dielectric capacity of liquids, 1881, A., 963.
- Hoppe, Edmund**, electrical resistance of flame, 1878, A., 2.
- Hoppe-Seyler, Ernst Immanuel Felix**, the production of light by atomic movements, 1873, 311.  
 — on the seat of decomposition of albumin and other nutrients in the animal organism, 1874, 187.  
 — formation of the colouring-matter of urine from blood, 1875, 96.  
 — on bile pigments in urine, 1875, 902.  
 — fermentative processes and their relation to the life of the organism, 1876, i., 951.  
 — rotatory power of grape sugar, 1876, ii., 553.  
 — differences of chemical structure and of digestion amongst animals, 1877, ii., 202.  
 — lecithin and nuclein in beer yeast, 1879, A., 811.  
 — a simple experiment to show the evolution of oxygen by plants in sunlight, 1879, A., 819.  
 — active condition of oxygen induced by nascent hydrogen, 1880, A., 3.

- Hoppe-Seyler, Ernst Immanuel Felix**, chlorophyll, 1880, A., 53, 894; 1882, A., 412.  
 — fermentation of glycerol, 1881, A., 82.  
 — on urea in the liver, 1882, A., 754.
- Hoppe-Seyler, Ernst Immanuel Felix**. See also **Eugen Baumann**.
- Horbaczewski, Jan**, products of the action of hydrochloric acid on albuminoids, 1880, A., 723.
- Horn, W. F.**, phosphoric acid, 1880, A., 367.
- Hornberger, Richard**, zirconium compounds, 1876, ii., 275.  
 — estimation of alkalis in plant ashes, 1878, A., 245.  
 — influence of steaming on the digestibility of hay, 1880, A., 734.
- Hornberger, Richard, Carl Mutschler**, and **Friedrich Hammerbacher**, analyses of the ashes of the fruit of *Lithospermum officinale* and of the wood of *Calamus Rotang* and *Bambusa arundinacea*, 1875, 910.
- Hornberger, Richard**. See also **A. C. Prehn**.
- Horner, Charles**, spectra of some cobalt compounds in blowpipe chemistry, 1873, 1161.  
 — didymium in scheelite, 1874, 345.  
 — spectra of baric and phosphoric acid blow-pipe beads, 1874, 642.  
 — behaviour of certain fluorescent bodies in castor oil, 1875, 120.
- Hornstein, F. E.**, remarks on Fischer's communications upon cat's-eye quartz, 1877, ii., 411.
- Horsford, Eben A.**, reduction of carbon dioxide to monoxide by ferrous phosphate, 1874, 225, 654; 1875, 1159.
- Horsin-Déon, Paul**, the sacrocarbonates of lime, 1873, 612.  
 — sugar from the date palm, 1880, A., 100.  
 — inactive and inverted sugar, 1880, A., 100, 458.
- Horstmann, August Friedrich**, dissociation, 1876, ii., 269; 1877, i., 433.  
 — vapour density of ammonium sulphides, 1877, ii., 840.  
 — relative affinities of hydrogen and carbon monoxide, 1878, A., 8; 1879, A., 436.  
 — constitution of the vapour of acetic acid, 1878, A., 852.  
 — application of the second proposition of the theory of heat to chemical phenomena, 1881, A., 777.
- Horvath, Alcoris**, apparatus for filtering at high temperatures, 1874, 432.
- Hostmann**, urn-resin, 1876, i., 614.
- Houdart, E.**, examination of the dried extracts of wine, 1877, ii., 939.  
 — analyses of French wines, 1878, A., 534.  
 — estimation of 'plaster' in wines, 1882, A., 425.
- Houghton, Frederick Tyrie Sidney**, note on an olivine gabbro from Cornwall, 1881, A., 388.
- Houston, Edwin J.**, and **Elihu Thomson**, a new allotropic modification of phosphorus, 1875, 1160.
- Houzeau, Auguste**, decolorizing power of concentrated ozone, 1873, 37.  
 — volumetric estimation of small quantities of arsenic and antimony, 1873, 407.  
 — estimation of ammonia in coal gas, 1873, 409.  
 — proposed new method of estimating carbon dioxide, 1873, 938.  
 — estimation of carbonic acid in waters, 1876, ii., 426.  
 — disappearance of ammonia contained in natural waters, 1876, ii., 650.  
 — use of calcium chloride for watering the roads of streets and parks, 1876, ii., 674.  
 — some analytical processes for meteorological purposes: ammonia, 1877, ii., 510.  
 — acidimetry, 1877, ii., 916.  
 — volumetric estimation of sulphates in potable waters, 1878, A., 1006.  
 — valuation of pyrites by the gravimetric method, 1880, A., 583.  
 — amount of iron in the mineral waters of Rouen and Forges-les-Eaux, 1881, A., 397.
- Houzeau, Auguste**, and **Adolphe Renard**, application of concentrated ozone in organic chemistry: ozobenzene, 1873, 610.
- How, Henry**, on two coals from Cape Breton, their cokes and ashes, with some comparative analyses, 1874, 325.  
 — contributions to the mineralogy of Nova Scotia: centrallasite—stilbite—sphaerostilbite—cylindroid of various minerals filling a vapour tube—magnetite—magnetic hematite—antimony, 1876, ii., 55.  
 — the stilbite (desmine) of Nova Scotia, 1877, i., 582.  
 — relative composition of ulexite and franklandite, 1877, ii., 174.

- How, Henry**, some American pyrrhotites and other minerals containing nickel, 1878, A., 475.
- some reactions with Lindo's test for some of the bases in opium, 1878, A., 811.
- Howard, David**, optical properties of some modifications of the cinchona alkaloids, 1873, 1177.
- aricine, 1875, 309.
- the distribution of the alkaloids in cinchona, 1877, ii., 636.
- notes on cinchona bark, 1880, A., 177.
- Howard, David**, and **John Hodgkin**, on a new alkaloid from cinchona bark, 1882, T., 66.
- Howard, John Eliot**, on the leaves of *Cinchona succirubra*, 1873, 524.
- Howe, Allen B.**, gmelinite from Nova Scotia, 1877, ii., 719.
- Howitt, Alfred William**, notes on the diabase rocks of the Buchan district, 1882, A., 584.
- Hübener, Theodor**, a peculiar occurrence of crystalline silica, 1875, 239.
- Hübl, (Baron) Arthur von**. See **Rudolf Benedikt**.
- Hübner, Adolf**. See **Richard Richter**.
- Hübner, Hans (Julius Anton Edward)**, chloral and acetonitrile, 1873, 626.
- estimation of iodine in presence of chlorine and of bromine, 1873, 939.
- iodonitrophenols, 1874, 801.
- on orientation in the aromatic series, 1875, 887.
- replacement of hydrogen in benzene, 1875, 1257.
- nitrosalicylic acids, 1876, i., 593; 1879, A., 380.
- derivatives of benzanilide and other compounds, 1876, ii., 309.
- *o*-nitro- and *o*-amido-benzonitriles, 1878, A., 140.
- reactions of *p*-, *m*-, and *o*-nitro-benzanilides, 1878, A., 142.
- reactions of amides with cyanogen iodide, 1878, A., 143.
- anhydro-compounds, 1878, A., 143; 1881, A., 1130; 1882, A., 180, 503.
- action of amyl iodide on anhydro-benzoyldiamidobenzene, 1878, A., 144.
- replacement of the diazo-group by  $\text{SO}_2\text{H}$ , 1878, A., 145.
- nitracetophenone, 1878, A., 147.
- dinitrobenzoic and nitramidobenzoic acids, 1878, A., 148.
- di- and tri-bromobenzoic acids, and dibromosalicylic acids, 1878, A., 148.
- Hübner, Hans (Julius Anton Edward)**, salicylic acid and nitric acid, 1878, A., 150.
- action of acid chlorides on amido-derivatives, 1878, A., 107.
- iodosalicylic acids, 1879, A., 928.
- formulae of maleic and fumaric acids, 1881, A., 254.
- Hübner, Hans**, and **Friedrich Bente**, action of chlorine and nitric acid on benzyl dichloride, 1874, 152.
- Hübner, Hans**, and **Oskar Brenken**, phenols, 1873, 751.
- chlorosalicylic acid, 1873, 756.
- Hübner, Hans**, and **Karl von Euckha**, phenoxylie acid, 1877, ii., 485.
- Hübner, Hans**, and **Emil Albert Fricke**, amidobenzonitrile, 1875, 272.
- Hübner, Hans**, and **Ernst August Grete**, *m*-bromotoluene, 1874, 151.
- Hübner, Hans**, and **Paul Haesselbarth**, derivatives of bromotoluene, 1873, 886.
- Hübner, Hans**, and **Eugen Lellmann**, diiodopropyl alcohol and moniodo-allyl alcohol, 1880, A., 538; 1881, A., 242.
- Hübner, Hans**, and **Wilhelm Majert**, chlorotoluenes, 1873, 1135.
- Hübner, Hans**, and **Julius Post**, bromotoluenes, 1874, 56.
- Hübner, Hans**, and **Hermann Retschy**, amidobenzene, and the preparation of *m*-amidobenzene, 1873, 1146.
- new base from nitrobenzanilide, 1874, 78.
- Hübner, Hans**, and **Paul François van Hamel Roos**, isomeric bromotoluidines, 1874, 165.
- Hübner, Hans**, and **Werner Schneider**, isomeric dinitrophenols, 1873, 1030.
- Hübner, Hans**, and **Sigismund Edward Simon**, diethyl- and diamyl-anhydro-benzoyldiamidobenzene compounds, 1879, A., 923.
- Hübner, Hans**, and **August Stromeyer**, nitration of *p*-nitrobenzoic acid, 1880, A., 549.
- Hübner, Hans**, and **Gustav Weiss**, conversion of benzoic acid into *m*-chloro-*o*-oxybenzoic acid, 1873, 756.
- Hübner, Hans**, and **Richard Douglas Williams**, dibromo- and nitrodibromobenzenesulphonic acids, 1873, 1039.
- Hübner, Hans**, **S. Moulton Babcock**, and **Heinrich Schaumann**, nitrosalicylic acids and dinitrophenols, 1879, A., 928.
- Hübner, Hans**. See also **Paul Ehrhardt Jannasch**.



- Hüfner, Carl Gustav**, the mode of action of unorganized ferments, 1874, 600 ; 1875, 662.
- on catalytic action; the mechanics of catalytic processes, 1875, 997.
- on the possibility of the disengagement of free nitrogen gas during the decay of nitrogenous organic matter, 1876, ii., 210.
- composition and possible origin of the gas from a pyæmic abscess, 1876, ii., 212.
- on the development of organisms in the absence of free oxygen, 1876, ii., 322.
- estimation of urea by means of sodium hypobromite, 1879, A., 405.
- estimation of hæmoglobin and oxygen in the blood, 1879, A., 835.
- chemistry of the bile, 1879, A., 949; 1882, A., 874.
- researches on the physical chemistry of blood, 1881, A., 111.
- crystalline hæmoglobin, 1881, A., 625.
- Hüfner, Carl Gustav**. See also *A. Zeller*.
- Hünefeld**. See *Eduard Reichardt*.
- Hueppe, Ferdinand**, behaviour of unorganized ferments at high temperature, 1882, A., 317.
- Hueppe, Ferdinand**. See also *von Wolffhügel*.
- Huggenberg**, ethylic  $\alpha$ -ethylacetosuccinate and  $\alpha$ -ethylsuccinic acid, 1876, i., 565; 1878, A., 782.
- Huggins, William**, luminous spectrum of water, 1881, A., 1.
- photographic spectra of stars, 1881, A., 485, 956; 1882, A., 250.
- on the spectrum of the flame of hydrogen, 1881, A., 957; 1882, A., 250.
- Huggon, William**, obituary notice of, 1880, T., 259.
- Hughes, John**, note on the analysis of Cambridge coprolites, 1875, 913.
- analysis of shoddy and wool waste, 1881, A., 661.
- Huizinga, Dirk**, further researches on abiogenesis, 1874, 85.
- dialysed albumin, 1876, i., 719.
- Hulwa, Franz**, analysis of the Kanizer or Kainzer Spring, 1881, A., 30.
- Curaçoa guano, 1881, A., 61.
- Humbert, August Friedrich**. See *Jules Piccard*.
- Hummel, John James**, and *Arthur George Perkin*, on some new compounds of hæmatein and brazilein, 1882, T., 367.
- Hummel, Julius**, diphenic acid, 1879, A., 165.
- Humpidge, Thomas Samuel**, on the coal-gas of the metropolis, 1877, i., 621.
- Humpidge, Thomas Samuel**, and *William J. Burney*, on erbium and yttrium, 1879, T., 111.
- Hunæus, Paul**, citric and aconitic acids, 1877, i., 456.
- Hunæus, Paul**, and *Ernst Carl Theodor Zincke*, styrolene alcohol (*phenyl glycol*), 1878, A., 223.
- Hunæus, Paul**. See also *Otto Wallach*.
- Hunnus, Hermann**, some derivatives of acetophenone, 1878, A., 147.
- Hunt, Bertram**. See *Edmund James Mills*.
- Hunt, Thomas Sterry**, decarbonisation of iron, 1873, 98.
- a new ore of copper and its metallurgy, 1878, A., 480.
- separation of copper from the precious metals, 1882, A., 119.
- Hunter, Charles J.**, effect of potassium salts on the growth of potatoes, 1873, 1255.
- Hunter, John**, obituary notice of, 1873, 777.
- Huntington, Alfred Kirby**. See *Walter Noel Hartley*, (*Sir*) *Charles William Siemens*.
- Huntington, Oliver Whipple**, revision of the atomic weight of cadmium, 1882, A., 363.
- Huppert, Karl Hugo**, nramido-acids, 1874, 256.
- analysis of the acid well (Sauerbrunnen) at Bilin, 1878, A., 209.
- Hurter, Ferdinand**, action of the Glover tower, 1878, A., 614, 689.
- estimation of cyanogen in sodalyses, 1879, A., 402.
- Husemann, August**, the Salsal springs at Chur, 1874, 671.
- the Belvedra spring at Chur, 1874, 671.
- the bath mud of Pignien, Graubünden, 1874, 672.
- chalybeate springs of St. Moritz in the Upper Engadine, 1876, i., 358.
- chemical investigation of the mineral springs on the left bank of the Inn at Tarasp in the Lower Engadine, 1876, i., 359.
- analysis of the springs containing arsenic, iron, and sodium in the Sinestrathal of the Graubündner Unter-engadin, 1876, i., 362.
- identity of the plant bases lycine and betaine, 1876, i., 405.
- detection of morphine, 1876, i., 777.

- Husemann, Theodor Gottfried**, is pure carbolic acid (phenol) non-poisonous? 1873, 79.  
 — on two new poisons, 1876, i., 410.  
 — thymol as an antiseptic, 1876, i., 990.  
 — Java rhubarb, 1877, ii., 914.  
 — ptomaines considered in relation to judicial chemistry and toxicology, 1881, A., 57; 1882, A., 246, 635, 1006.  
**Huson, Charles**, new method of testing with Bunsen's flame, 1873, 1158.  
**Hussak, Eugen**, basaltic lavas of the Eifel, 1880, A., 19.  
 — the so-called hypersthene-andesite from St. Egidii in Lower Styria, 1881, A., 695.  
 — pierite prophyr of Steierdorf in the Banat, 1882, A., 587.  
**Husson, C.**, action of iodide of nitrogen on starch, 1873, 46.  
 — some reactions of hæmoglobin and its derivatives, 1876, ii., 104; 1877, i., 753.  
 — examination of the organic matter found in ancient soils, 1876, ii., 495.  
 — detection and estimation of fuchsine and arsenic in wines which have been artificially coloured with fuchsine, 1876, ii., 667.  
 — on fats used for the adulteration of butter, 1878, A., 249.  
 — examination of coffee, tea, and chicory, 1879, A., 558.  
**Husson, C.** See also *C. Bancel*.  
**Hutchings, William Maynard**, analyses of chrysocolla and copper pitchblende, 1877, i., 55; ii., 575.  
 — formation of "moss copper," 1877, ii., 113.  
 — detection of bismuth by von Kobell's test, 1877, ii., 922.  
 — aluminium plates as a support in blowpipe work, 1878, A., 166.  
**Hutchinson, Christopher Clarke**, Schützenberger's process for the volumetric estimation of oxygen in water, 1879, A., 77.  
 — estimation of cadmium in presence of zinc; separation of zinc, cadmium, and copper, 1880, A., 748.  
**Huth, Theodor**. See *Otto Wallach*.  
**Hvoslef, H.**, santonin acid, 1874, 360.

## I.

- Idanoff, E.**, diethylmethylacetic acid, 1877, i., 454.  
**Igelström, Lars Johan**, manganophyll, 1873, 150.  
**Ihle, Rudolf**, cresols and cresotic acids, 1877, i., 708.  
**Ihle, Rudolf**. See also *Heinrich Reinhardt*.  
**Ihlée, Ernst**, pyromecconic acid, 1878, A., 34.  
**Iles, Mulvern Wells**, a new qualitative reaction for boric acid, 1877, ii., 352.  
 — lead chlorobromide, 1881, A., 789.  
 — a new manganese mineral, 1882, A., 578.  
**Iles, Mulvern Wells**, and *Ira Remsen*, oxidation of xylenesulphonic acids, 1877, ii., 776; 1878, A., 412.  
 — oxidation of xylenethiamides, 1878, A., 505.  
 — a new mode of formation of  $\alpha$ -oxyisophtalic acid ( *$\alpha$ -phenoldicarboxylic acid*), 1878, A., 584.  
 — oxidation of sulphamido-xylene, 1879, A., 52.  
**Iles, Mulvern Wells**. See also *Constantin Fahlberg*.  
**Ilgen, O.**, Solvay's soda used in the preparation of ultramarine, 1879, A., 987.  
**Imbert**. See *Paul Cazeneuve*.  
**Ingenhoses, P. H. B.**, existence of double salts in solution, 1880, A., 32.  
**Ingle, Herbert**. See *Albert Edward Wilson*.  
**Inostranzeff, Alexander A.**, a new variety of native carbon, 1881, A., 357.  
**Ionine, N.** See *Paul Schützenberger*.  
**Irby, John Robin McDaniel**, analysis of an iron slag of fine blue colour, from Barrow Iron Works, Lancashire, 1874, 340.  
 — conversion of calcium oxalate into carbonate in analysis, 1874, 390.  
 — experiments to determine the effect of the carbon in iron wire on the use of the wire in standardising a solution of potassium permanganate, 1874, 1179.  
 — crystallography of calcite, 1880, A., 530.  
**Irby, John Robin McDaniel**, and *J. Alston Cabell*, analyses of the ashes of Virginian tobaccos, with determinations of nicotine and total nitrogen, 1875, 289.  
**Ireland, J.**, Blair's process for iron manufacture, 1879, A., 89.  
**Isambert, Nicolas Ferdinand Irénée**, action of uranous oxide on silver nitrate, 1875, 1164.  
 — dissociation of chlorine hydrate, 1878, A., 370.

- Isambert, Nicolas Ferdinand Irénée**, dissociation of barium carbonate, 1878, A., 373.  
 — sulphur chloride, 1878, A., 553.  
 — heat produced by the union of metallic chlorides with ammonia, 1878, A., 697.  
 — dissociation of ammonium hydro-sulphide, 1879, A., 880.  
 — vapour of ammonium dihydro-sulphide, 1881, A., 673.  
 — tension of the vapour of ammonium carbamate, 1882, A., 269.  
 — ammonium bisulphide and ammonium cyanide, 1882, A., 1021.  
**Issleib, Max**, the bitter principle and resin of hops, 1881, A., 101.  
**Isel, Ernst**. See *Adolph Claus*.  
**Iwig, Fr.** See *Otto Hecht*.

## J.

- Jablochkoff, Paul**, a battery in which the carbon electrode is the one attacked, 1878, A., 191.  
**Jack, W. Edwin**. See *William Frederick Keating Stock*.  
**Jackson, Charles Loring**, on some methyl and benzyl compounds of selenium, 1875, 154, 533; 1876, i., 580.  
 — benzyl cyanate, 1875, 1024.  
 — on the base  $C_{13}H_{13}N$  from aniline tailings, 1876, i., 266; 1877, ii., 606, 762.  
 — derivatives of tribromobenzene, 1876, i., 390.  
 — action of dehydrating agents on acetanilide, 1876, i., 603.  
 — relative displacability of bromine in the monobromobenzyl bromides, 1876, ii., 512; 1880, A., 161.  
 — curcumin, 1881, A., 610.  
**Jackson, Charles Loring**, and *Alfred W. Field*, *p*-chlorobenzyl chloride and bromide, 1879, A., 62.  
 — action of bromine on toluene and its derivatives, 1880, A., 878.  
 — *p*-chlorobenzyl compounds, 1881, A., 803.  
**Jackson, Charles Loring**, and *Woodbury Lowery*, substituted benzyl compounds, 1876, i., 704.  
 — *p*-bromobenzyl compounds, 1878, A., 64; 1882, A., 170.  
**Jackson, Charles Loring**, and *Albert Edward Menke*, curcumin, 1882, A., 1107.  
**Jackson, Charles Loring**, and *Friedrich Ludwig Alphons Oppenheim*, two derivatives of mercuric mercaptides, 1876, i., 364.  
**Jackson, Charles Loring**, and *J. Fleming White*, substituted benzaldehydes, 1878, A., 728.  
 — synthesis of anthracene, 1880, A., 262.  
 — *p*-chlorobenzyl compounds, 1880, A., 578; 1881, A., 806.  
 — *o*-bromobenzyl compounds, 1880, A., 879.  
 — synthesis of anthracene and phenanthrene from *o*-bromobenzyl bromide, 1881, A., 822.  
**Jackson, Charles Loring**. See also *Charles Frederic Mabery*.  
**Jackson, Oscar Roland**, methylketole, 1881, A., 734.  
 — tetrahydromethylquinoline, 1881, A., 712.  
**Jackson, Oscar Roland**, and *Henry Barker Hill*, mucobromic acid, 1878, A., 402; 1879, A., 224.  
**Jackson, Oscar Roland**. See also *Adolf von Baeyer*.  
**Jacobi, H. von**, galvanic reduction of iron under the influence of a powerful electromagnetic solenoid, 1873, 831.  
**Jacobs, Fr.** (and others), experiments with potatoes, 1881, A., 932.  
**Jacobsen, Emil**, solvents for indigo, 1873, 179.  
**Jacobsen, Gustav**, phenylphosphoric acids and their chlorides, 1876, i., 596.  
**Jacobsen, Oscar Georg**, gases contained in sea-water, 1873, 860.  
 — investigation of human bile, 1874, 81.  
 — condensation of higher ketones, 1875, 259.  
 — crystalline modification of dichloraldehyde, 1875, 630.  
 — on the trimethylbenzenes of coal tar oil, and their separation, 1876, ii., 77.  
 — formation of the benzene hydrocarbons by dry distillation, 1877, ii., 445.  
 — phorone-cumene, 1877, ii., 447.  
 — preparation of *p*-xylene from coal tar oil, 1877, ii., 600.  
 — derivatives of the xylenes, 1877, ii., 600.  
 — occurrence of *o*-xylene in coal tar, 1877, ii., 600.  
 — abnormal solubility of zinc xylidate, 1877, ii., 617.  
 — xylenesulphonic acids and xyleneols, 1878, A., 410.  
 — hydroxytoluic and hydroxyphthalic acids, 1878, A., 582, 583; 1881, A., 599; 1882, A., 193.

- Jacobsen, Oscar Georg**, isooxycinnamic acid from carvaerol, 1878, A., 731.  
 — oxidation of *m*-xylenesulphamide, 1879, A., 53.  
 — constitution of the prepyl group in cymene, 1879, A., 228.  
 — constitution of hydroxymesitylenic acid, 1879, A., 247.  
 — products of the action of fused potash on potassium mesitylene sulphate, 1879, A., 529.  
 — isocymene (*p*-methylcymene), 1879, A., 624.  
 — hydroxy-*p*-xylic acid, 1879, A., 641.  
 — sulphaminemesitylenic acid and a new hydroxymesitylenic acid, 1879, A., 643.  
 — behaviour of cymene in the animal organism, 1880, A., 38.  
 — anhydrosulphonamineisophthalic acid, 1881, A., 51.  
 — Wickersheimer's preservative fluid, 1881, A., 126.  
 — hydroxyuvitic acid, 1881, A., 172.  
 — sulphamine- and hydroxy-acids derived from mesitylene, 1881, A., 429.  
 — hydroxymesitylenic acid from xylenol, 1881, A., 599.  
 — *m*-toluic acid and its derivatives, 1882, A., 185.  
 — the third xylic acid and its corresponding xylidenic acid, 1882, A., 187.  
 — methylation of benzene by methyl and aluminium chlorides, 1882, A., 390.
- Jacobsen, Oscar Georg**, and **Hermann Lönnies**, *α*-isophthalosulphonic acid, 1881, A., 50.
- Jacobsen, Oscar Georg**, and **Richard Neumeister**, bromochloral, chlorobromal, bromochloroform, and chlorobromoform, 1882, A., 938.
- Jacobsen, Oscar Georg**, and **E. Weinberg**, dibromo-*m*-xylenesulphonic acid, 1879, A., 61.
- Jacobsen, Richard**, carbon pictures on gypsum or earthenware plates, 1873, 424.  
 — waterproofing of silk paper, 1874, 500.  
 — tinning tissues, 1874, 720.  
 — photographic printing without the use of a press, 1874, 930.
- Jacobson, Paul**, *β*-derivatives of naphthalene, 1881, A., 736.  
 — constitution of *β*-naphthaquinone, 1882, A., 204.
- Jacobson, Paul**. See also *Carl Theodor Liebermann*.
- Jacquelain, Victor Auguste**, pure carbons for the electric light, 1882, A., 1142.
- Jacquemart, F.**, influence of superphosphates on the percentage of sugar in beet, 1882, A., 1314.
- Jacquemin, Emile**, action of chlorine on a mixture of phenol and aniline, 1873, 1117.  
 — action of iodic acid on pyrogalllic acid, 1873, 1239.  
 — pyrogallol and salts of iron, 1873, 1259; 1874, 1016.  
 — analytical and toxicological research on phenol, 1874, 922.  
 — influence of the presence of nitrogen in textile fibres on the direct fixing of aniline colours, 1874, 1026.  
 — analytical and toxicological researches on aniline, 1874, 1105.  
 — on the direct combination of chromic acid with wool and silk, and on its application to dyeing and to the analysis of wines, 1874, 1192.  
 — detection of potassium cyanide in presence of non-poisonous double cyanides, 1875, 384.  
 — adulteration of essential oil of cloves, 1876, i., 760.  
 — nitrobenzene analytically and toxicologically considered, 1876, i., 766.  
 — action of ammonia on rosaniline, 1876, ii., 100.  
 — detection of fuchsine in wines, 1876, ii., 446, 667.  
 — rhodaine, a new test for aniline, 1876, ii., 655; 1877, i., 109.  
 — application of the ferrosopyrogallie reagent to the estimation of bicarbonates in waters, 1877, i., 340.
- Jäckel-Handwerk**, prevention of the occurrence of lactic acid in beer, 1881, A., 857.
- Jäckel-Handwerk**. See also *Karl Michel*.
- Jäderholm, Axel**, the colouring matter of blood, 1878, A., 236.  
 — metahæmoglobin, 1881, A., 185.
- Jaeger, C.**, nitrosophenol, 1875, 1260.  
 — azophenol, 1876, i., 580.
- Jaeger, C.** See also *Adolf von Baeyer*.
- Jäger, Emil**, a compound of chloral and thymol, 1875, 159.  
 — on some derivatives of dithymyl-trichlorethane, 1877, i., 262.
- Jäger, J. H.**, behaviour of melam to sulphuric acid, 1877, i., 298.  
 — action of monochloroacetic acid on the thiocyanates of the aromatic monamines, 1877, ii., 873.



- Jaffé, Max**, origin of indican in urine, 1873, 516.  
 — action of nitrotoluene on the animal economy, 1875, 478.  
 — a new constituent of dogs' urine, 1875, 478.  
 — urocaninic acid, 1875, 1187.  
 — on the excretion of indican under physiological and pathological conditions, 1878, A., 442.  
 — behaviour of benzoic acid in the organism of birds, 1878, A., 584.  
 — ornithuric acid and its derivatives, 1878, A., 585.  
 — synthetic processes in the animal body, 1879, A., 176.  
 — acids produced by the introduction of chloro- and bromo-benzene into the animal body; 1879, A., 796.
- Jaffé, Max.** See also **Hans Horst Meyer**.
- Jagi.** See **Georg Martin**.
- Jago, William**, organic matter in seawater, 1881, T., 320.
- Jahn, Hans**, secondary octyl bases, 1875, 1188.  
 — analysis of the warm springs of Thermopylæ, 1878, A., 391.  
 — valonia and certain other sources of tannin, 1879, A., 248.  
 — action of phosphonium iodide on carbon bisulphide, 1880, A., 370.  
 — decomposition of simple organic compounds by zinc dust, 1880, A., 794; 1881, A., 141.  
 — vapour density of bromine, 1882, A., 794.  
 — attempts to prepare secondary and tertiary amines of secondary alcohol radicles, 1882, A., 820.
- Jahne, Ludwig**, composition of some forest seeds, 1882, A., 643.
- Jahns, Ernst**, behaviour of borax to salicylic acid and of boric acid to salicylates, 1878, A., 499.  
 — ethereal oil of *Origanum hirtum* and Cretan oil of marjoram, 1880, A., 112.  
 — some constituents of the essential oil of *Origanum vulgare* and *Thymus Serpyllum*, 1881, A., 95.  
 — strychnine hydrate, 1882, A., 74.  
 — campheride, 1882, A., 208.  
 — galangin and alpinin, 1882, A., 866.  
 — occurrence of carvacrol in the ethereal oil of garden sage (*Satureia hortensis*), 1882, A., 1065.
- Jaillard**, absorbing power of wood charcoal, 1879, A., 761.
- Jaksch, Rudolf von**, occurrence of nuclein in the human brain, 1877, i., 221.
- Jaksch, Rudolf von**, occurrence of acetoacetic acid in urine, 1882, A., 1120.
- James, J. William**, on ethylene chlorothiocyanate and its oxidation into chlorethylsulphonic acid, 1879, T., 806.
- Jamieson, James**, breathing of plants and animals, 1880, A., 911.
- Jamieson, Thomas**, influence of soluble and insoluble phosphates as manure for turnips, 1880, A., 186.  
 — Aberdeenshire experiments on the relative value of soluble and insoluble phosphates, 1882, A., 653.
- Jamin, Jules Célestin**, and **Georges Maneuvrier**, effects produced in a vacuum by the current from a Gramme machine, 1882, A., 913.  
 — appearance of the electric arc in vapour of carbon bisulphide, 1882, A., 1157.
- Jandousch, Al.**, comparison of the action of sodium amalgam and of zinc and sulphuric acid as reagents for Hager's arsenic test, 1878, A., 243.
- Janeček, Gustav**, electrolysis, 1876, i., 182.  
 — composition of two varieties of turnips, 1880, A., 917.  
 — Croatian bread, 1882, A., 1151.
- Janeček, Gustav.** See also **Adolf Lieben**.
- Janecke.** See **Carl Engler**.
- Jani, W.** See **O. Abesser**.
- Janke, Louis**, analysis of milk, 1880, A., 514; 1882, A., 661.
- Jannasch, Paul Ehrhardt**, crystallized xylene or *p*-dimethylbenzene, 1874, 467.  
 — oxidation of *o*-toluic acid, prepared synthetically from liquid dimethylbenzene by chromic acid, 1874, 479.  
 — durene, 1874, 987.  
 — trimethylbenzene, 1875, 888.  
 — preparation of durene from *p*-dibromobenzene, 1877, ii., 751.
- Jannasch, Paul Ehrhardt**, and **A. Dieckmann**, *p*-bromotoluic acid, 1874, 477.  
 — ethyltoluene, 1875, 1189.
- Jannasch, Paul Ehrhardt**, and **Hans Hübner**, *o*-xylene from the liquid bromotoluene formed by the action of bromine on toluene, 1874, 257.
- Jannasch, Paul Ehrhardt**, and **Chr. Rump**, discovery of vanillin in Siam benzoin, 1879, A., 245.
- Jannasch, Paul Ehrhardt**, and **Carl Stünkel**, crystallisation of  $\alpha$ - and  $\beta$ -dinitro-*p*-xylene, 1881, A., 808.
- Jannettaz, Edouard**, conduction of heat in crystallised bodies, 1873, 838.



- Jannettaz, Edouard**, use of potassium bisulphate to detect the presence of galena, 1874, 188.  
 — action of potassium bisulphate on natural sulphides, 1874, 773.  
 — thermic conductivity of rocks and other bodies, 1874, 1045.  
 — conduction of heat in schistose rocks, 1876, i., 516.  
 — the dispersion of heat in bodies, and its relation to the structure of minerals, 1876, ii., 39.  
 — colours of the diamond in polarised light, 1881, A., 357.
- Janny, Alois**. See **Victor Meyer**.
- Janovsky, J. V.**, the different methods of estimating phosphoric acid in presence of iron oxide, alumina, potash, and magnesia, 1873, 91.  
 — arsenuretted hydrogen, 1873, 842.  
 — analysis of two minerals from Greenland, 1874, 136, 237.  
 — analysis of a mineral from Orawicza, 1874, 237, 346.  
 — contributions to the chemical history of cronstedtite, 1875, 1165.  
 — on arsenic compounds, 1876, i., 681.  
 — quantivalence, 1876, ii., 270.  
 — some chemical constants, 1880, A., 365.  
 — niobite from Isergebirge, 1880, A., 369.  
 — optical constants, 1881, A., 214.  
 — alteration of molecular weight and molecular refractive power, 1881, A., 862.  
 — a new azobenzenedisulphonic acid, 1882, A., 48.  
 — azobenzenesulphonic acids, 1882, A., 834.  
 — nitro-derivatives of azobenzene-*p*-sulphonic acid, 1882, A., 1285.
- Janssen, Pierre Jules Cesar**, note on quantitative spectral analysis, 1873, 1258.  
 — inversion of photographic images by the prolonged action of light, 1881, A., 1, 1179.
- Japp, Francis Robert**, on the action of organo-zinc compounds on quinones, 1879, T., 526; 1880, T., 408.  
 — on  $\alpha$ - and  $\beta$ -phenanthrenecarboxylic acids, with remarks on the constitution of phenanthrene, 1880, T., 83.
- Japp, Francis Robert**, and **Christopher Colborne Graham**, on diquinolyline, 1881, T., 174.
- Japp, Francis Robert**, and **Norman Harry John Miller**, on the action of benzoic acid on naphthoquinone, 1881, T., 220.
- Japp, Francis Robert**, and **Henry Halliburton Robinson**, on the constitution of amarine and lophine, 1882, T., 323.
- Japp, Francis Robert**, and **Gustav Theodor August Otto Schultz**, occurrence of methylantracene in coal tar, 1877, ii., 624.  
 — phenanthrenecarbonic acid, 1878, A., 77.
- Japp, Francis Robert**, and **Frederick William Streatfeild**, on the action of aldehydes on phenanthraquinone in presence of ammonia, 1882, T., 146.  
 — application of the aldehyde and ammonia reaction in determining the constitution of quinones, 1882, T., 157.  
 — on the action of acetone on phenanthraquinone, both alone and in presence of ammonia, 1882, T., 270.
- Japp, Francis Robert**, and **Edgar Wilcock**, on the action of benzaldehyde on phenanthraquinone, both alone and in presence of ammonia, 1880, T., 661.  
 — on the action of aldehydes on phenanthraquinone in presence of ammonia, 1881, T., 225.
- Japp, Francis Robert**. See also **Richard Anschütz**.
- Jarisch, Adolf**, analysis of blood-ash, 1877, ii., 940.
- Jarmain, Georg**, on the water used in dyeing woollen goods, 1878, A., 625.
- Jarolimek, Anton**, hardening of steel, 1877, i., 413.
- Javorsky, Anton**, and **Edvard Přivoznik**, extraction of silver from cast-iron crucibles used in coinage, 1876, i., 453.
- Jawein, Ludw.**, hexylenes, 1878, A., 961.
- Jawein, Ludw.** See also **Fedor F. Beilstein**.
- Jay, Henry**, estimation of urea in urine, 1880, A., 513.  
 — detection of alcohol in transparent soaps, 1881, A., 314.  
 — plastering of wine, 1882, A., 96.
- Jazukowitsch, H. N.**, action of oxygen on coal and paraffin, 1876, i., 894.
- Jean, Ferdinand**, analysis of soaps, 1873, 195.  
 — process for determining phosphoric acid, 1874, 1007.  
 — decomposition of sodium tungstate and molybdate by ammonium chloride, 1874, 1138.  
 — new method of estimation by titration, 1875, 1286.

- Jean, Ferdinand**, preparation of tungsten and composition of wolfram, 1876, i., 47.  
 — substance used for the adulteration of guano, 1876, i., 98.  
 — volumetric estimation of astringent principles, 1876, ii., 117.  
 — the analysis of nitrates, 1876, ii., 550.  
 — determination of alkaline sulphates, 1877, i., 738.  
 — quebracho, a new tanning material, 1877, ii., 897.  
 — titration of œnolin and œnotannin in wine, 1882, A., 430.  
 — estimation of tannin and œnogallic acid in wines, 1882, A., 780.  
 — clarification of must in the manufacture of champagne, 1882, A., 1145.
- Jean, Ferdinand**, and **Henri Pellet**, volumetric analysis of a mixture of the sulphates of the alkalis and alkaline earths, 1877, ii., 353.  
 — — volumetric estimation of chromium, 1877, ii., 351.  
 — — estimation of oxalic acid and oxalates, 1877, ii., 358.
- Jean, Ferdinand** (and others), analysis of wine, 1882, A., 1137.
- Jean, Ferdinand**. See also *Frédéric Weil*.
- Jeanmaire, Paul**, action of alkalis on cotton and flax, 1874, 931.  
 — a new alkaline solid blue, 1875, 923.  
 — method of preventing aniline-black from turning green, 1877, ii., 951.
- Jeannel, Guillaume**, influence of the roots of plants on putrefaction, 1876, i., 99.
- Jeannel, Guillaume**. See also *Camille Saintpierre*.
- Jeanneret, Jules**, decomposition of gelatin and albumin by pancreas ferments in absence of air, 1877, ii., 630.
- Jegel, B.**, mill-dust and a coloured alga present in flour, 1878, A., 922.
- Jehle, L.** See *C. Brier*.
- Jehn, Carl**, reactions occurring in the preparation of carbon monoxide from potassium ferrocyanide, 1873, 497.  
 — arsenical hydrofluoric acid, 1873, 528.  
 — precipitation of alumina by borax, 1874, 775.  
 — a test for peppermint oil, 1875, 385.  
 — an interesting formation of alumina, 1876, i., 189.
- Jehn, Carl**, determination of acetic acid, 1877, ii., 641.  
 — valuation of vinegar, 1878, A., 345.  
 — butter analysis, 1878, A., 685.
- Jehn, Carl**, and **H. Hinze**, oxidation of metallic aluminium, 1875, 1001.
- Jellet, John Hewitt**, change of composition in potatoes during disease, 1877, i., 732.
- Jenkins, Edward H.**, on the influence of silicic acid on the estimation of phosphoric acid by ammonium molybdate, 1876, ii., 115; 1877, i., 344.  
 — absorption of ammonia gas by calcium sulphate, 1876, ii., 172.
- Jenkins, Edward H.** See also *Samuel William Johnson*.
- Jennings, Thomas**, obituary notice of, 1876, i., 617.
- Jenssen, Christian**, manuring experiments with oats, 1880, A., 136.
- Jenssen, Fr.**, derivatives of *p*-nitrotoluenesulphonic acid, 1874, 479.  
 — *p*-amido-*o*-toluenesulphonic acid, 1875, 77.
- Jeremin, F.**, ozone, 1879, A., 8.
- Jeverson and Boldt**, preservation of yeast, 1874, 726.
- Jewett, John**, influence of acetic acid on the separation of iron as basic acetate from manganese, zinc, cobalt, and nickel, 1880, A., 289.
- Jezler, Ch.**, recovery of manganese dioxide, 1876, i., 128.  
 — extraction of copper from poor ores, 1876, i., 795.  
 — composition of Weldon-mud and similar substances, 1881, A., 323.
- Jičinský, Ferdinand**, estimation of juice of sugar-beets, 1873, 297.  
 — practical application of titration to the estimation of the alkalinity of juice in the manufacture of sugar, 1873, 1060.  
 — improvements in the determination of the amount of juice in sugar-beet, 1873, 1262.  
 — is the decolourising power of animal charcoal due to the carbon or to porosity? 1878, A., 266.
- Joannis, Jean Alexandre**, lead, cadmium, and mercury oxycyanides, 1881, A., 1116.  
 — sodium and barium cyanides, 1882, A., 483.  
 — strontium, calcium, and zinc cyanides, 1882, A., 484.  
 — hydroferrieyanic acid, 1882, A., 790.

- Joannis, Jean Alexandre**, heat of formation of hydroferrocyanic acid and of some ferrocyanides, 1882, A., 791.
- heat of formation of thiocyanic acid and of some thiocyanates, 1882, A., 1158.
- heat of formation of palladium compounds, 1882, A., 1258.
- Job, A. T.**, production of benzoic acid and bitter almond oil from toluene, 1882, A., 1146.
- Jobst, Julius von**, Javanese cinchona barks, 1874, 89.
- the quinine salts of salicylic acid and phenol, 1876, i., 610.
- cotain, the crystalline constituent of coto bark, 1876, ii., 425; 1877, i., 480.
- coto barks and their crystalline constituents, 1877, i., 480.
- influence of nitrogenous manure on the yield of alkaloids in certain plants, 1877, ii., 213.
- on quinine tannates, 1878, A., 678.
- crystalline quinoidine borate, 1881, A., 56.
- Jobst, Julius von**, and **Oswald Hesse**, dita bark, 1876, i., 276.
- coto barks and their characteristic ingredients, 1877, ii., 201; 1878, A., 733; 1880, A., 325.
- Joclet, Victor**, preparation of liquid indigo-carmin, 1878, A., 625.
- use of chrome alum instead of potassium dichromate in wool dyeing, 1879, A., 185.
- Jodin, F. Victor**, on vegetable glyco-genesis, 1878, A., 239.
- photochemical reaction of ferric oxalate, 1882, A., 911.
- Jørgensen, Sofus Mads**, on some thallium compounds, 1873, 475.
- herapathite and similar acid periodides, 1877, i., 210, 713; ii., 571.
- anhydrous sodio-ferric pyrophosphate, 1878, A., 199.
- action of silver nitrate on hydroplatinic chloride, 1878, A., 200.
- platinosoplatinic oxide, 1878, A., 200.
- cobaltammonium compounds, 1879, A., 119, 597.
- contributions to the chemistry of the chromammonium compounds, 1880, A., 10; 1882, A., 468, 1167.
- rhodammonium compounds, 1882, A., 1173.
- Joffe, Jules**, the mineral oils of Buxière-la-Grue and Cordesse, 1873, 1013.
- Johanson, Edwin**, chemistry of the barks of the oak, willow, and elm, 1877, i., 720.
- chemical constituents of the willow and its pathological formations: certain reactions with tannins and allied substances, 1879, A., 160.
- Johanson, Edwin** (and others), adulteration of butter, 1882, A., 559.
- John (Edler von Johannesberg), Conrad Heinrich**, analysis of andesite containing augite and hornblende from Toplitz in Transylvania, 1875, 550.
- halloysite from Tüfler, 1881, A., 693.
- Johnson, George Stillingfleet**, on certain compounds of albumin with acids, 1874, 734.
- on certain sources of error in the ultimate analysis of organic substances containing nitrogen, 1876, i., 178.
- on potassium triiodide, 1877, i., 249.
- on certain polyiodides, 1878, T., 183.
- on ammonium triiodide, 1878, T., 397.
- on the occlusion of hydrogen by copper, 1879, T., 232.
- on the synthetical production of ammonia by the combination of hydrogen and nitrogen in presence of heated spongy platinum, 1881, T., 128, 130.
- Johnson, Otis Coc**, test for arsenic, 1879, A., 277.
- Johnson, Richard**, obituary notice of, 1881, T., 188.
- Johnson, Samuel William**, estimation of nitrogen, 1874, 187.
- composition and culture of tobacco, 1874, 286.
- use of potassium dichromate in ultimate organic analysis, 1874, 1011.
- on Thorpe's and Bunsen's methods for the estimation of nitrogen in nitrates, 1877, ii., 799.
- Johnson, Samuel William**, and **Russell H. Chittenden**, on Schweitzer's new acid ammonium sulphates, 1878, A., 373.
- distribution of arsenic in the animal body, 1881, A., 1082.
- Johnson, Samuel William**, and **Edward H. Jenkins**, determination of nitrogen in the analyses of agricultural products, 1879, A., 962.
- determination of phosphoric acid, 1879, A., 966.
- Johnson, Thomas**. See **John Wilkes**.

- Johnson, William H.**, influence of acids on iron and steel, 1873, 848.
- Johnston, George**, note on some crystalline products from a blown out iron furnace, 1875, 1163.
- on the decomposition of stearic acid by distillation under pressure, 1876, i., 8.
- Johnston, (Miss) Margaret Neill.** See (Miss) *Catherine Lucy Kennedy*.
- Johnstone, David Ewart**, preparation of nitric oxide, 1882, A., 692.
- Johnstone, William**, analysis of Moffat and Hertfell Spas collected on the 5th and 12th of October, 1874, 1875, 436.
- analysis of the Airthrey Springs at the Bridge of Allan, 1875, 872.
- analysis of the water of St. Dunstan's Well, Melrose, 1879, A., 905.
- chalybeate spring, Kingstead, St. Edmund's, 1881, A., 1112.
- Jolin, Severin**, some bromine derivatives of naphthalene, 1877, ii., 901.
- Jolly, Léopold**, distribution of phosphates in the blood, 1879, A., 662.
- combinations of phosphoric acid in the nervous substance, 1880, A., 274.
- distribution of phosphates in the muscles and tendons, 1880, A., 275.
- Jolly Léopold.** See also *Paquelin*.
- Jolly, Philipp von**, expansion coefficient of gases, 1874, 1047.
- variations in the composition of the atmosphere, 1880, A., 85, 698.
- Joly, Alexandre**, researches on the niobates and tantalates, 1876, i., 46.
- the oxyfluorides of niobium and tantalum, 1876, i., 883.
- the nitrides and carbides of niobium and tantalum, 1876, ii., 277.
- saturation of phosphoric acid by bases, 1882, A., 692.
- Jolyet, F., and T. Blanche**, experimental researches on the physiological action of nitrogen monoxide, 1873, 1154.
- Jones, Edward William Taylor**, butter fat: its analysis and composition, 1877, ii., 519.
- Jones, Francis**, stibine, 1876, i., 641.
- action of reducing agents on potassium permanganate, 1878, T., 95.
- on a hydride of boron, 1879, T., 41.
- Jones, Francis, and Robert L. Taylor**, on boron hydride, 1881, T., 213.
- Jones, G.** See *S. T. Pruen*.
- Jones, Henry Bence**, obituary notice of, 1874, 1201.
- Jones, Henry Chapman**, on a simplification of Regnault's method for determining boiling points with small quantities of substances, 1878, T., 175.
- on polysulphides of sodium; sodium pentasulphide, 1880, T., 461.
- Jones, Henry Williams**, amount of ash and soluble matter in the three kinds of buchu, 1879, A., 391.
- Jones, John Benbow, Henry Wardwell Shepard, and Robert Seaman**, galvanising iron, 1882, A., 119.
- Jonge, D. de**, secretion from the sebaceous glands of birds, 1879, A., 176.
- Jordan, O.**, dibrom- and tetrabrom-hydrazobenzenesulphonic acids, 1880, A., 808.
- Jordan, P.**, manufacture of ferro-manganese and volatility of manganese, 1878, A., 772; 1879, A., 755.
- Jordan, Samson**, on the conditions necessary to the manufacture of iron highly impregnated with silicon in blast furnaces, 1873, 1067.
- Jordan, Whitman Howard**, composition of Timothy grass at different periods of growth, 1882, A., 1127.
- Jorissen, Armand**, detection of fusel oil in spirit, 1882, A., 429.
- presence of furfural in fermented liquids, 1882, A., 941.
- separation of nickel and cobalt, 1882, A., 1234.
- Joubert, Jules**, the phosphorescence of phosphorus, sulphur, and arsenic, 1874, 1058.
- alternating currents and the electromotive force of the electric arc, 1880, A., 783.
- Joubert, Jules, and Charles Edouard Chamberland**, note on the fermentation of fruits plunged into carbonic anhydride, 1877, i., 106.
- Joubert, Jules.** See also *E. Allard, Louis Pasteur*.
- Joulie, H.**, commercial analysis of nitrates, 1873, 530.
- on the assimilability of phosphates, 1873, 766.
- retrogradation of superphosphates, 1879, A., 987.
- Joulie, H. (and others)**, reduction of superphosphates and the behaviour of phosphoric acid in soils, 1880, A., 571.
- Joulin, Léon**, researches on saline decomposition, 1873, 589.
- researches on the production of electricity by mechanical actions, 1873, 839.



- Joulin, Léon**, decomposition of metallic carbonates by heat, 1873, 814.  
 — researches on diffusion, 1880, A., 526.
- Jourdan, Friedrich**, synthesis of *n*-nonoic acid, and of an isomeric acid of palmitic acid, 1880, A., 313.
- Jousselin, L.**, nitrosoguanidine, 1878, A., 132; 1879, A., 613.  
 — salts of guanidine, 1879, A., 914.
- Jüdel, Gustav**, preservation of meat, 1878, A., 456.
- Jünemann, Friedrich**, on the refining of sugar, and the recovery of sugar from molasses by alcohol, 1873, 99.  
 — separation of sugar from molasses, 1881, A., 128.
- Jünemann, Friedrich** (and others), experiments on the recovery of sugar from molasses, 1882, A., 784.
- Jüptner, Hanns (Freiherr) von**, molecular changes, 1877, ii., 405; 1878, A., 108.  
 — volumetric estimation of lead by potassium permanganate, 1882, A., 897.
- Julien, Alexis Anastay**, composition of cymatolite from Goshen, Mass., 1880, A., 225.  
 — spodumene and its alterations, 1881, A., 1005.
- Juhlin-Dannfeldt, Herman Julius B.** See *Per Theodor Cleve*.
- Juncker, G.** See *E. Richters*.
- Jungck, M.**, precipitation of iron and alumina by sodium acetate, 1877, i., 344.
- Jungfleisch, Emile Cl.**, conversion of *d*-tartaric acid into racemic acid, 1873, 166; 1878, A., 138.  
 — reciprocal transformation of inactive tartaric and racemic acids: preparation of inactive tartaric acid, 1873, 270.  
 — synthesis of circularly polarising organic bodies: construction of *d*- and *l*-tartaric acids from ethylene, 1873, 743.  
 — preparation of acetylene, 1880, A., 456.  
 — decomposition of racemic acid, 1882, A., 602.
- Jungfleisch, Emile Cl.**, and **Edmond Lefranc**, levulose, 1882, A., 158.
- Jungfleisch, Emile Cl.** See also *Marcellin Berthelot, Paul Emile Lecoq de Boisbaudran*.
- Jurisch, Konrad Wilhelm**, Deacon's process for the preparation of chlorine, 1877, i., 350.
- Jurisch, Konrad Wilhelm**, oxidation of soda liquors, 1881, A., 765.  
 — purification of soda leys by zinc, 1882, A., 903.
- Juslin, V.**, *n*- $\alpha$ -amidovaleric acid, 1882, A., 599.
- Jussieu, Fr. de**, alloys of lead and antimony, 1879, A., 889.
- Just, Johann Leopold**, influence of temperature on the germination of seeds, 1879, A., 393.
- Jutsum, Sydney C.**, estimation of total carbon in iron and steel, 1880, A., 751.
- Jutz, G. W.**, monochlorocinnamic acid, 1882, A., 1073.

## K.

- Kablukoff, Ivan A.**, triacetin, 1881, A., 408.  
 — new method for obtaining oxymethylene (*methalddehyde*), 1882, A., 824.
- Kachel, Emil**, and **Rudolph Fittig**, sorbic acid, 1874, 43.
- Kachler, J.**, compounds of the camphor group, 1874, 154; 1878, A., 512.  
 — oxidation products of camphor, 1875, 456.  
 — Borneo camphor, 1878, A., 512; 1879, A., 1039.  
 — adipic acid from camphor, 1880, A., 559.  
 — action of nitric acid on brominated fatty acids, 1882, A., 36.
- Kachler, J.**, and **Fr. V. Spitzer**, relations of the camphenes obtained from borneol and from camphor, 1880, A., 324.  
 — hydrocamphene, 1880, A., 669.  
 — camphocarbonic acid, 1880, A., 892.  
 — borneolcarboxylic acid and camphocarboxylic acid, 1882, A., 66.  
 — two isomeric dibromocamphors and monobromocamphor, 1882, A., 861.
- Kachler, J.** See also *Heinrich Hermann Christian Hlasiwetz*.
- Kade, R.**, dibenzyldisulphonic acid, 1873, 1240; 1874, 695.  
 — action of chlorine on dibenzyl, 1880, A., 46.
- Kämmerer**, corroded gauge-glasses, 1876, i., 799.
- Kaemmerer, Hermann**, contributions to the knowledge of citric acid, 1874, 252.



- Kaemmerer, Hermann**, note on barium citraconate, 1874, 253.  
 — a lecture experiment with potassium, 1874, 443.  
 — analytical notes—1. chromium phosphate; 2. qualitative separation of barium from strontium and calcium; 3. flame test for boron; 4. separation of iodic and periodic acid; 5. detection of nitrous acid in water, 1874, 1005.  
 — chemical examination of water, 1874, 1006.  
 — preparation of cadmium crystals, 1875, 425.  
 — detection of nitrous and nitric acids in water, 1875, 912.  
 — a convenient gas apparatus, 1875, 998.  
 — oxalic acid and ethyl acetate, 1875, 1171.  
 — hydrocitric acid, amidocitric triamide, and monethyleitric acid, 1875, 1178.  
 — combustion of nitrogen:—a lecture experiment, 1878, A., 110.  
**Kaemmerer, Hermann**, and **Eduard Benzinger**, iodated derivatives of phenols, 1878, A., 574.  
**Kaemmerer, Louis**, ammonium molybdate, 1873, 354.  
**Kahlbaum, Georg W. A.**, physical properties of some methyl compounds of 3- and 4-carbon acids, 1879, A., 521.  
 — polymerides of methyl acrylate, 1881, A., 250.  
**Kaiser, Jos. Ad.**, detection of arsenic in cases of poisoning, 1876, i., 754.  
**Kajander, Nicholas N.**, rate of solution of magnesium in different acids, 1881, A., 344.  
**Kajander, Nicholas N.** See also *Józef Jerzy von Boguski, Dmitri I. Mendeléeff*.  
**Kalischer, S.**, Japanese alloys, 1875, 922.  
 — influence of heat on the molecular structure of zinc, 1882, A., 792.  
 — molecular structure of metals, 1882, A., 792.  
**Kalkowsky, Ernst**, salite as a constituent of rocks, 1876, i., 195.  
 — the granite-porphyr of Bencha near Leipzig, 1879, A., 27.  
 — the leucitophyr of Lake Averno, 1879, A., 609.  
 — piperno, 1881, A., 699.  
**Kallab, Ferd. Vich.**, new bleaching process for animal textile fibres, 1879, A., 99.  
**Kallen, J.**, helenin and inula-camphor, 1874, 352; 1876, i., 917.  
**Kalmann, Wilhelm**, softening of water, 1876, ii., 217.  
 — composition of Chinese porcelain, clay, and glass ware, 1876, ii., 446.  
**Kalmann, Wilhelm**, and **Franz Böcker**, influence of gypsum solution on soils, 1878, A., 803.  
**Kalmann, Wilhelm**. See also *Johann Oser*.  
**Kamenski, Iwan**, action of the halogens on guanidine salts, 1878, A., 564.  
**Kamenski, Iwan**. See also *Otto Wallach*.  
**Kammerer, F.**, solidification of antimony pentachloride, 1875, 1163.  
**Kammerer, F.** See also *Carl Arnold August Michaelis*.  
**Kanitz, A.**, the varnishing of casks, 1874, 1193.  
**Kannonnikoff, Innocentius I.**, note on the preparation of acid chlorides, 1875, 879.  
 — influence of the structure of organic substances on their refractive power, 1882, A., 349.  
**Kannonnikoff, Innocentius I.**, and *Alexander M. Saytzeff*, synthesis of secondary butyl alcohol, 1875, 626.  
 — attempt to prepare a secondary alcohol from the radicles ethyl and allyl, 1876, i., 548.  
 — action of a mixture of ethyl and allyl iodides on ethyl formate in presence of zinc, 1877, ii., 298.  
**Kannonnikoff, Innocentius I.**, and *Michael M. Saytzeff*, preparation of allyl iodide and of acetic anhydride, 1877, ii., 730.  
**Kapusstin, M.**, estimation of carbonic acid in the air, 1880, A., 420; 1881, A., 204.  
**Karetnikoff**, action of silver oxalate on ethene and propylene bromides, 1877, ii., 422.  
 —  $\beta$ -chlorobutyraldehyde, 1880, A., 235.  
**Kariof, K.**, dipropylresorcinol and some of its derivatives, 1881, A., 269.  
 — derivatives of dimethylquinol, 1881, A., 272.  
**Karmarsch, Karl**, laws regulating volume changes in the formation of alloys and in mixtures of liquids, 1878, A., 367.  
**Kasanzeff**, alloys of gold and mercury, 1878, A., 937.  
**Kaschirsky, M.**, action of certain oxides on the chlorhydrin of ethylene glycol, 1878, A., 21.

- Kaschirsky, M.**, action of organic zinc compounds on the bromides of  $\alpha$ -mono-brominated acids of saturated series, 1879, A., 46; 1882, A., 36.
- Kaspar, O.**, analysis of commercial potassium iodide, 1882, A., 96.
- Kast, Hermann.** See *Rudolph Fittig*.
- Kastner, Lud.**, quantitative estimation of tellurium by grape sugar and inverted sugar, 1876, i., 440.
- Kastropp, Ad.**, new method of formation of phenetol, 1878, A., 145.
- Kathreiner, Franz**, tannin estimation, 1878, A., 612, 637.
- Katzujama.** See *Georg Martin*.
- Kauffmann, Georg**,  $\beta$ -naphthoxyl aldehyde, 1882, A., 1068.
- Kaufmann, Constantin**, decomposition of blood by *Bacillus subtilis*, 1878, A., 593.
- Kaufmann, Fr.**, polysubstituted carbamides, 1882, A., 183.
- Kavčić, Johann**, heliographic printing, 1882, A., 1009.
- Kay, William Edward**, on the sulphides of vanadium, 1880, T., 728.
- Kayser.** See *Pierre Paul Dehérain*.
- Kayser, Edwin**, nitrated cresylethyl oxides, 1882, A., 1202.
- amidocresylethyl oxides, 1882, A., 1203.
- Kayser, Heinrich**, influence of pressure and temperature on the surface condensation of gases, 1882, A., 270.
- Kayser, Johann Emanuel Friedrich Robert**, action of sea-water on lead, 1876, i., 683.
- chrome ore analysis, 1876, ii., 657.
- warning with hot air, 1878, A., 250.
- electrolytic deposition of nickel, 1878, A., 537.
- photographic printing in natural colours, 1878, A., 613.
- alkaline earths in wine, 1882, A., 121.
- estimation of potash in wine, 1882, A., 336.
- effect of gypsum on the constitution of wine, 1882, A., 434.
- Keates, Thomas W.**, mode of generating sulphurous acid as a disinfectant, 1877, i., 236.
- Kebler, Eliot Abbott.** See *Frank Wigglesworth Clarke*.
- Kedzie, R. C.** (and others), hurtful action of potato sugar, 1881, A., 770.
- Keegan, Vincent Etjah**, a method of rendering wood and other fibrous substances suitable for the manufacture of paper, 1873, 1069.
- Kehlstadt, Albert**, occurrence of free sulphur in the dry distillation of tar, 1880, A., 831.
- Kehrer, Eduard Alexandre, and Bernhard Tollens**, hydrocarbons obtained as bye-products in the decomposition of levulic acid by hydriodic acid, 1881, A., 399.
- conversion of levulic acid into *n*-valeric acid, 1881, A., 411.
- Kehrer, Eduard Alexandre.** See also *August (Freiherr) von Grote*.
- Keith, N. S.**, process for desilvering and refining raw lead by electrolysis, 1879, A., 288, 410.
- Kekulé, August Friedrich**, action of sulphonyanates on benzoic acid, 1873, 636.
- new conversion of turpentine into cymene, 1873, 889.
- constitution of camphor, 1873, 1228.
- action of phosphorus pentachloride on phenol-*p*-sulphonic acid, 1873, 1239.
- *o*-cresol and other ortho-compounds, 1875, 64.
- synthesis of citric acid, 1881, A., 256.
- Kekulé, August Friedrich, and Richard Anschütz**, Tanatar's dioxymaleic acid, 1881, A., 156.
- Tanatar's trioxymaleic acid, 1881, A., 714.
- Kekulé, August Friedrich, and Anton Fleischer**, carvol and carvacrol, 1874, 65.
- Kekulé, August Friedrich, and Antoine Paul Nicolas Franchimont**, triphenylmethane, 1873, 171.
- on benzophenone chloride and the formation of anthraquinone in the preparation of benzophenone, 1873, 171.
- Kekulé, August Friedrich, and Albert Rinne**, constitution of the allyl compounds, 1873, 1017.
- Kekulé, August Friedrich.** See also *Giovanni Angelo Barbaglia, Anton Fleischer*.
- Kelbe, Werner**, nitrobenzotoluidines, 1876, i., 270.
- naphthylphosphinic acid, 1876, ii., 525.
- naphthylphosphorus and naphthylarsenic compounds, 1879, A., 67.
- hydrocarbon from rosin oil, 1879, A., 467.
- abietic acid, 1880, A., 670.
- *m*-isocymene, 1880, A., 878; 1882, A., 299.

- Kelbe, Werner**, occurrence of an aromatic hydrocarbon  $C_{11}H_{16}$  in rosin oil, 1881, A., 809.
- displacement of the sulpho-group by bromine, 1882, A., 618.
- Kelbe, Werner**, and **Constantin Warth**, caproic acid present in rosin oil, 1882, A., 711.
- Kelbe, Werner**. See also **A. Ziegler**.
- Keller, A.**, flesh-meal as fodder, 1881, A., 302.
- Keller, Edward**. See **Wilhelm Michler**.
- Keller, F.**, the glaze of red Roman pottery, 1878, A., 618.
- Keller, G.**, artificial pseudomorphs of goëthite, limonite, and hæmatite, 1882, A., 576.
- Keller, J. L.**, chemical examination of fûh-ling (*Lycoperdon solidum*), 1877, i., 337.
- Kellermann, Christoph**, composition of the growing potato, 1879, A., 174.
- Kellermann, Christoph**. See also **Ernst von Raumer**.
- Kellner, Oscar**, chemical changes in the germination of peas, 1875, 777.
- utilisation of Norwegian fish guano, 1878, A., 240.
- work and digestion of a horse, 1878, A., 992.
- nitrogenous constituents of young grass and hay, 1879, A., 819.
- nutritive value of malt, 1879, A., 1050.
- quantities of amides and albuminoids in green plants, decomposition of nitric acid and ammonia in plants, 1880, A., 279, 731.
- spent hops as fodder, 1880, A., 344.
- muscular activity and waste of tissue, 1880, A., 486.
- estimation of non-albuminous nitrogen compounds in plants, 1880, A., 513.
- quantitative estimation of digested protein, 1880, A., 563.
- formation of fat in ripening cheese, 1880, A., 594.
- purification and digestibility of lupins, 1880, A., 935; 1881, A., 838.
- relations between work and the decomposition of food in the body, 1881, A., 114.
- researches on the digestion of proteids, 1881, A., 296.
- changes produced in beet leaves by fermentation, 1881, A., 302.
- comparison of the influence of field beans and lupins on the production of milk, 1881, A., 927.
- Kellner, Oscar**, effect of feeding on the weight of animals, 1882, A., 77.
- amount of non-albuminous nitrogen in roots, 1882, A., 83.
- Kelly, O'Neill F.**, action of chloro-carbonic ether on halogen compounds of the fatty acid series, 1879, A., 305.
- Kempe, Bernhard**. See **L. Paul Liechti**.
- Kemperdick, H.** See **Adolph Claus**.
- Kennedy, (Miss) Catherine Lucy**, and **(Miss) Margaret Neill Johnston**, analysis of the mineral water of the Boston Spa, Thorp Arch, 1881, T., 515.
- Kennedy, George W.**, solanine in *Solanum Lycopersicum*, 1873, 918.
- coca, 1880, A., 169.
- Kennepohl, G.**, nitrogenous constituents of excrements, 1881, A., 1058.
- Kennepohl, G.** See also **Hugo Weiske**.
- Kenngott, Gustav Adolf**, winkworthite, 1873, 150.
- miloschine, 1873, 853.
- characters of certain boles, 1874, 966.
- on the formula of triplite, 1875, 616.
- the fundamental forms of crystal species, 1879, A., 14.
- polydymite, 1879, A., 18.
- on unghvarite, nontronite, gramenite, etc., 1879, A., 31.
- the formula of tetrahedrite, 1882, A., 147.
- Kent, William**, chemical composition of gases and slags from blast furnaces, 1876, i., 969.
- Kerckhoff, Petrus Johannes van**, slow combustion, 1873, 127.
- Kern, A.**, preparation of methylaniline, 1876, i., 935; 1877, ii., 325.
- Kern, Ernst**, nitrogenous compounds from milk sugar, 1874, 1078.
- estimation of amido-compounds, 1880, A., 764.
- Kern, Ernst**. See also **Johann Wilhelm Julius Henneberg**.
- Kern, Sergius**, coal in Russia, 1875, 737, 1241.
- on some reactions of metallic sodium with chloroform, 1875, 746.
- some properties of nitroglycerin, 1875, 748.
- apparatus for obtaining sulphuretted hydrogen, 1875, 864.
- new method of quantitative analysis of ordinary alloys, 1875, 1053.
- ammonio-silver carbonate, 1875, 1162.
- preparation of metallic barium, 1875, 1162.
- strontium sulphide, 1876, i., 39.

- Kern, Sergius**, estimation of manganese in spiegeleisen, ferromanganese, iron, and steel, 1876, i., 110; 1877, ii., 647.
- purification of carbon disulphide, 1876, i., 188.
  - analysis of graphite from Siberia, 1876, i., 350.
  - action of metallic magnesium on certain metallic salts, 1876, i., 683, 880; ii., 479.
  - laboratory notes:—(1) test for uranium; (2) on the use of cuprous oxide, 1876, i., 741.
  - a new test for gold, 1876, i., 750.
  - chromeisen and other alloys, 1876, i., 794.
  - some silver compounds, 1876, i., 881.
  - preparation of metallic titanium, 1876, i., 882.
  - recently discovered iron ores in Russia, 1876, i., 889.
  - estimation of manganese in cast iron, 1876, i., 962.
  - on some reactions of iodine and palladium chloride with potassium ferrocyanide, 1876, ii., 325.
  - formation of carbon monosulphide, 1876, ii., 477.
  - presence of copper in cast iron, 1877, i., 235.
  - preparation of some coloured fires used in pyrotechny, 1877, i., 235.
  - estimation of phosphorus in the form of an ammoniophosphomolybdic salt, 1877, i., 738.
  - calculation of the percentage of chemically combined carbon in analyses of steels by Eggertz's colorimetric method, 1877, i., 742.
  - the new metal, davyum, 1877, ii., 278, 712.
  - preliminary researches on the action of magnesium on some organic compounds, 1877, ii., 285.
  - quantitative analysis of slags, fire clay, bricks, and iron ores, 1877, ii., 356.
  - preparation and use in casting steel of alloys of silicon and manganese, 1877, ii., 522.
  - presence of occluded oxygen in steels, especially in Bessemer steel, 1877, ii., 815; 1878, A., 649.
  - preparation of chromium crucible steel, 1878, A., 177; 1879, A., 567.
  - presence of hydrogen peroxide in the atmosphere, 1878, A., 267.
  - metallurgical notes, 1878, A., 354.
  - the solution of molybdate of ammonium in nitric acid, 1878, A., 375.
- Kern, Sergius**, analysis of glass, 1878, A., 555.
- sulphur and phosphorus in iron, 1878, A., 1919.
  - purification of cast iron from phosphorus, 1879, A., 286.
  - distribution of manganese in ferromanganese alloys, 1879, A., 286.
  - working of mild steel, 1879, A., 410.
  - action of sea-water on iron and steel plates, 1879, A., 564.
  - steel welding, 1879, A., 567.
  - manganese steel, 1879, A., 567.
  - some analyses of iron, 1880, A., 73.
  - estimation of carbon in cast steel, 1880, A., 289.
  - Bessemer steel plates, 1880, A., 356.
  - some remarks on Siemens-Martin steel, 1880, A., 769; 1881, A., 667.
  - manganese in steel, 1881, A., 950.
- Kerner, George**, influence of crystalline and amorphous quinine on the white blood corpuscles and on the formation of pus, 1873, 647.
- testing commercial sulphate of quinine for foreign alkaloids, 1881, A., 63.
- Kernler, F.**, on making red wine, 1879, A., 681.
- Kerpely, Anton K. von**, behaviour of phosphatic pig iron during the puddling process, 1878, A., 815.
- Kerr, John**, electro-optic experiments on various liquids, 1880, A., 599; 1882, A., 678.
- Kerr, William C.** See *Frederick Augustus Genth*.
- Kessel, Friedrich**, secondary butyl ether, 1874, 676.
- action of ethylidene oxychloride on zinc ethyl, 1875, 554.
  - double salts of cuprous thiosulphate, 1878, A., 113; 1879, A., 124.
  - brominated ethyl ether, 1878, A., 128.
  - brominated and chlorinated ethyl acetate, 1878, A., 133; 1879, A., 137.
  - decomposition of ethyl monobrom- and dibrom-acetate, 1879, A., 220.
  - wax of *Ficus gummiflua*, 1879, A., 261.
- Kessler, Friedrich**, manganese in steel, 1873, 204.
- investigations on the Bessemer process, 1873, 299, 540.
  - preparation of pure manganous oxide, 1873, 355.



- Kessler, Friedrich**, analysis of pig iron and steel, 1873, 408.
- a lecture experiment on the solar spectrum, 1876, ii., 266.
- estimation of manganese especially in its alloys with iron, 1879, A., 341.
- law of multiple proportions, 1879, A., 691.
- atomic weight of antimony, 1879, A., 772; 1880, A., 299.
- pentathionic acid, 1880, A., 298.
- crystallised hydrofluosilicic acid, 1880, A., 789.
- employment of potassium permanganate in quantitative analysis, 1881, A., 843.
- titration of ferrous oxide with permanganate in presence of hydrochloric acid, 1882, A., 1323.
- Khern, C.**, iron furnace for use with lignite, 1873, 98.
- Kick, Friedrich**, Mushet's special steel, 1873, 204.
- etching of iron and steel, 1874, 1025.
- Kielmeyer, A.**, use of sodium aluminate in calico printing, 1873, 1271.
- iron liquor for calico printing, 1873, 1272.
- aniline-black with aniline ferrocyanide, 1875, 1062.
- Orleans-yellow on cotton, 1876, i., 819.
- cochineal for woollen goods, 1877, ii., 380.
- red colour reaction of wood, 1878, A., 626.
- Kienlen, Paul**, commercial valuation of bituminous rocks and limestones, 1880, A., 682.
- Kiepenheuer, Ludwig**. See **Otto Wallach**.
- Kieselinsky, E.**, *m*-chlorobenzenesulphonic acid, 1876, i., 930.
- Kiesow, J.** See **Franz Josef König**.
- Kietz, Albert**, digestion in the stomach, 1882, A., 877.
- Kiliani, Heinrich**, oxidation of lactose and lactonic acid by silver oxide; preparation of lactonic acid, 1881, A., 243.
- identity of arabinose and lactose, 1881, A., 243.
- inulin, 1881, A., 243.
- preparation of glycollic acid from sugar, 1881, A., 251.
- potassium lactonate, 1881, A., 580.
- action of gluconic, saccharic, lactonic, and mucic acids on an alkaline copper solution, 1882, A., 429.
- gum arabic, 1882, A., 591.
- preparation of lactic acid, 1882, A., 715, 827.
- Kiliani, Heinrich**, saccharin, 1882, A., 820.
- Killing, K.**, the gneiss of the north-eastern Schwarzwald and its relationship to the mineral veins, 1879, A., 443.
- Kimball, A. S.**, some changes in the physical properties of steel, produced by tempering, 1877, i., 175.
- Kimber, J. W.**, experiments on the application of various phosphates as manure for swedes, 1882, A., 91.
- Kimich, C.**, action of aromatic bases on nitrosophenol and nitrosodimethylaniline, 1876, i., 268.
- azo-compounds of methazonic acid, 1877, ii., 325.
- Kinch, Edward**, agricultural chemistry in Japan, 1880, A., 134.
- King, Alfred John**. See **Peter Phillips Bedson**.
- King, J. Falconer**, process for the estimation of colour in water, 1875, 1052.
- Kingzett, Charles Thomas**, formation of sodium sulphide by the action of hydrogen sulphide on sodium chloride at high temperatures, 1873, 456.
- oxidation of essential oils, etc., 1874, 511; 1875, 210; 1876, i., 243; 1877, i., 183.
- calcic hypochlorite from bleaching powder, 1875, 404.
- the chemistry of *Diabetes mellitus*, 1876, ii., 319.
- pilocarpine, an alkaloid from jaborandi, 1876, ii., 367; 1877, ii., 907.
- critical notes on muscarine and some allied bases, 1877, ii., 628.
- the chemistry of cocoa-butter:— two new fatty acids, 1878, T., 38.
- contributions to the history of putrefaction, 1880, T., 15.
- report on the atmospheric oxidation of phosphorus and some reactions of ozone and hydric peroxide, 1880, T., 792; A., 3.
- atmospheric oxidation of turpentine, 1880, A., 51.
- direct production of phenol from benzene, 1882, A., 395.
- Kingzett, Charles Thomas**, and **Thomas Farries**, the chemical constituents of *Convolvulus scammonia*, 1877, ii., 901.
- Kingzett, Charles Thomas**, and **Maximilian Ziegler**, albumin of commerce, 1877, ii., 952.
- Kingzett, Charles Thomas**. See also **Benjamin H. Paul**, **John Louis William Thudichum**.
- Kinnear, J. Boyd**, estimation of nitric nitrogen, 1882, A., 1317.



- Kinnicutt, Leonard P.**, decomposition of phenyltribromopropionic acid by water, 1882, A., 730.  
 — indirect determination of chlorine and bromine by electrolysis, 1882, A., 772.
- Kinnicutt, Leonard P.** See also *Richard Anschütz*.
- Kircher, G.** See *C. L. Müller*.
- Kirchhoff, C.**, influence of impurities on the desilvering of lead, 1878, A., 761.
- Kirchmann, W.**, a simplification of the method of gilding iron by the dry process, 1873, 418.  
 — oxidation of mercury, 1873, 476.  
 — preparation and estimation of amines, 1877, i., 620.  
 — improved method of obtaining nicotine, conine, and sparteine, 1877, i., 716.
- Kirchner, Wilhelm Julius Otto Leopold**, and *Ph. Du Roi*, beet leaves as fodder for cows, 1879, A., 813.  
 — influence of ground-nuts on the production of milk, 1880, A., 487.
- Kirchner, Wilhelm Julius Otto Leopold**, and *Bernhard Tollens*, vegetable mucilage, 1875, 1179.
- Kirchner, Wilhelm Julius Otto Leopold** (and others), experiments on creaming, 1880, A., 75.
- Kirchner, Wilhelm Julius Otto Leopold**. See also *Ph. Du Roi*.
- Kirmis, M.**, transference of the ions, 1879, A., 193.
- Kirpitschhoff, Victor**. See *Dmitri I. Mendeléeff*.
- Kisieliński, Eugen**, the action of bromine on succinimide and a new mode of formation of fumaric acid, 1878, A., 43.  
 — recovery of nitrogen from molasses waste, 1882, A., 669.
- Kissel**, estimation of alkaloids in quinine barks, 1882, A., 899.
- Kissel, J.**, constitution of nitroethane, 1882, A., 375.  
 — constitution of the nitro-products of the fatty series, 1882, A., 935.
- Kissling, Richard**, presence of nicotine in tobacco smoke and consideration of the active poison in the combustion products of tobacco, 1882, A., 906, 1253.  
 — determination of nicotine in tobacco, 1882, A., 1005.
- Kistiakowsky, Basil**, a contribution to the characteristics of the pancreas peptones, 1875, 773.
- Kitchin, Archibald**, estimation of phosphoric acid as uranic phosphate, 1873, 942.
- Kittler, Erasmus**, difference of electric tension between liquids in contact, with special reference to the state of concentration, 1881, A., 491.  
 — tension differences between a metal and liquids of different concentration, 1882, A., 687.
- Kjeldahl, Johan Gustav Christophe Thorsager**, rotatory power of beer worts, 1879, A., 993.  
 — diastase, 1880, A., 562; 1881, A., 115.
- Klauss, A.** See *Friedrich Strohmer*.
- Klebs, Edwin**, preservation of milk, 1880, A., 148.
- Kleemann**, spent hops as fodder, 1879, A., 1050.
- Klein, Daniel**, reaction of boric acid in presence of mannite, 1878, A., 555.  
 — reaction of some polyatomic alcohols, 1878, A., 564.  
 — reaction of tungstates in presence of mannitol, 1880, A., 30.  
 — borotungstates, 1880, A., 612; 1881, A., 224, 879; 1882, A., 17.  
 — borodecitungstic acid and its sodium salts, 1881, A., 23.  
 — borododecitungstic acid, 1881, A., 24.  
 — cadmium borotungstate, 1881, A., 879.  
 — titanoborates, 1881, A., 880.  
 — a solution of density 3.28 suitable for mineral analysis, 1881, A., 1168.  
 — constitution of complex mineral acids derived from tungstic acid, 1882, A., 368.  
 — colloidal tungstic acid and its analogy with paratungstic acid, 1882, A., 469.
- Klein, Friedrich**. See *Adolf Pinner*.
- Klein, Johann Friedrich Carl**, contributions to crystallography, 1873, 584.  
 — the optical properties of the Sulzbach epidote, 1874, 557.  
 — felspar in the basalt from the Hohen Hagen near Göttingen, and its relation to the felspar of Monk Gibele in the Island of Pantellaria, 1880, A., 614.
- Klein, Joseph**, constitution of deoxalic acid, 1880, A., 36.
- Klein, L.**, estimation of carbon in cast-iron, 1879, A., 401.
- Klein, Otto**, compounds of organic bases with mercuric chloride, 1878, A., 667.  
 — compounds of organic bases with the haloid salts of mercury, 1880, A., 632.

- Kleinschmidt, Fr.** See *Wilhelm Staedel*.
- Klemm, Hugo**, topaz, 1874, 665.  
— artificial babingtonite, 1874, 965.
- Klenze, von.** See *Wilhelm Eugling, C. Werkowitsch*.
- Klepl, Arthur**, solubility of anhydrous copper sulphate in methyl alcohol, 1882, A., 1274.  
— two anhydrides of *p*-hydroxybenzoic acid, 1882, A., 1293.
- Kletzinsky, Vincenz**, basic ferric chromate, 1873, 657.
- Klever, J. W.**, glycerin as a solvent, 1873, 47.
- Klien, Georg**, injurious effect of peat water on meadows, 1880, A., 738.  
— experiments on sugar-beet, 1881, A., 301.  
— manuring experiments at Königsberg, 1882, A., 1130.
- Klien, Paul**, chromium garnet in Silesia, 1879, A., 361.  
— catlinite, 1879, A., 361.  
— fluorite from Evigtok in Greenland, 1879, A., 511.  
— diaspore from Jordansmühl, 1879, A., 603.  
— manganosite from Långban, Sweden, 1879, A., 605.
- Klimenko, Euthyme**, action of silver oxide on the ether of dichloropropionic acid from pyruvic acid, 1875, 353.  
— action of bromine on lactic acid, 1876, i., 900.  
— formation of lactide bromal, 1876, ii., 396.  
— sarcosolactic acid, 1877, ii., 882.  
— isomerides of lactic acid, 1881, A., 413.
- Klinger, August**, on milk analysis, 1876, i., 763.
- Klinger, Heinrich Contr.**, action of phosphorus pentachloride on ethylic phenylloxamate, 1875, 1025.  
— action of phosphorus pentachloride on phenyl- and *p*-tolyl-oxamethane, 1877, i., 710.  
— action of methyl iodide on sulphur, 1878, A., 128.  
— thioaldehydes, 1878, A., 132, 720.  
— magnitudes of affinity in carbon, 1881, A., 679.  
— formation of trimethylsulphine iodide, 1882, A., 1045.  
— sulphobenzene, 1882, A., 1058.  
— preparation of azoxybenzene, 1882, A., 1061.
- Klinger, Heinrich Contr.** See also *Heinrich August Bernthsen*.
- Klinkhardt, Arthur**, mucic acid and dehydromucic acid, 1882, A., 498.
- Klippert, L.**, action of silicon fluoride on sodium ethylate, 1875, 1171.  
— *p*-xylenedicarbonic acid, 1877, i., 468.
- Klipstein, August von**, the nepheline rock of Meiches in the Odenwald, 1879, A., 607.
- Klobukowski, Wladislaus Peter**, rufigallic acid, 1877, i., 84; ii., 618.  
— a method of estimating the halogens in organic compounds, 1877, ii., 225.  
— azonaphthalene, 1877, ii., 623.
- Klobukowski, Wladislaus Peter**, and *Emilio Nölting*, rufigallic acid, 1876, i., 259.
- Klocke, Friedrich**, the "etch figures" produced on the alums, 1879, A., 439.  
— sensitiveness of alum crystals to variations in the strength of their mother liquor, 1880, A., 529.  
— microscopical observations of the growth and resolution of the alums in solution of isomorphous substances, 1880, A., 855.
- Kloos, Johan Herman.** See *Johann August Streng*.
- Klose, Ed.** See *Joh. Adamec*.
- Klusemann, Otto**, phenyleneoxamic acid, 1875, 269.
- Knab, Oscar**, the determination of extract in beer or wort, 1873, 95, 655.
- Knap, Chas.**, analysis of precious garnet from the Cape of Good Hope, 1878, A., 946.
- Knapp, Friedrich Ludwig**, removal of chalk from animal charcoal by acetic (*pyroligneous*) acid, 1873, 99.  
— tin and lead alloys used for household vessels, 1876, ii., 448.  
— ultramarine, 1880, A., 155.
- Knapp, Friedrich Ludwig**, and *Paul Ebell*, ultramarine, 1878, A., 834.
- Knapp, Hermann von**, action of ammonia and amines on chloroquinones, 1881, A., 812.
- Knapp, Hermann von**, and *Gustav Theodor August Otto Schultz*, action of ammonia and ammonia bases on chlorinated amines, 1882, A., 510.
- Knauer, Ferdinand**, value constant for beet, 1881, A., 851.
- Knauer, W.** (and others), purification of water from sugar works, 1880, A., 930.
- Knecht, Edmund**, mesorcinol, 1882, A., 728, 1200.  
— fluorescein reactions, 1882, A., 968.
- Knecht, Wilhelm**, vapour density determinations, 1877, ii., 569; 1878, A., 264; 1880, A., 679.

- Knecht, Wilhelm**, vapour density of piperonal, 1877, ii., 894.  
 — chloro-derivatives of carbazole, 1880, A., 660.
- Knecht, Wilhelm**, and **Johann Unzeitig**,  $\alpha$ - and  $\beta$ -dinaphthylene oxides, 1881, A., 281.
- Knecht, Wilhelm**. See also **Carl Graebe**.
- Knieriem, Woldemar von**, formation of urea in the animal organism, 1875, 373.  
 — aspartic acid, a product of the artificial digestion of gluten with the pancreatic gland, 1876, i., 724.  
 — the excrements of poultry, 1877, ii., 792.
- Knieriem, Woldemar von**, and **Adolf Mayer**, origin of acetic fermentation, 1874, 178.
- Knietzsch, Rudolf**. See **Carl Theodor Liebermann**.
- Knight, John James**, manufacture of alkalis, 1873, 414.
- Knights, James West**, estimation of the insoluble fatty acids in butter, 1881, A., 201.  
 — estimation of nitrates in potable waters, 1881, A., 1173.
- Knoch, O.**, competitive cultivation of grass seeds, 1879, A., 824.
- Knösel, Th.**, treatment of platinum residues, 1874, 443.  
 — thallium iodides, 1874, 775, 1135.
- Knoll, Albert**. See **Robert Otto**.
- Knop, Adolf**, pyrochlore from Schelingen in the Kaiserstuhl Range, 1873, 479.  
 — the nickel ores of Horbach, near St. Blasien in the Black Forest, 1874, 34.  
 — koppite from the Kaiserstuhl, 1875, 617.  
 — pyrosclerite from the limestone quarry of St. Philipp, near S. Marie aux mines, Alsace, 1875, 620.  
 — a microchemical test for minerals of the haityne family, 1875, 620.  
 — pachnolite and cryolite, 1877, ii., 281.  
 — the schorlomite of the Kaiserstuhl, 1878, A., 118.  
 — dysanallyte, a mineral resembling pyrochlore, 1878, A., 385.  
 — artificial production of hollow pseudomorphs, 1881, A., 515.
- Knop, Johan August Ludwig Wilhelm**, analysis of Nile mud, 1874, 672.  
 — methods for the chemical analysis of soils, 1874, 1011.  
 — soils, 1875, 905.  
 — the albuminoids, 1876, i., 718; 1880, A., 562.
- Knop, Johan August Ludwig Wilhelm**, azotometry, 1876, i., 740.  
 — diabase from Berneck, 1879, A., 443, 824.  
 — quantitative estimation of potassium and sodium, 1882, A., 1132.
- Knops, asbestos fabrics**, 1882, A., 116.
- Knorr, Ludwig**, piperylhydrazine, 1882, A., 1115.
- Knorre, Georg von**. See **Gustav Alfred Wolffhügel**.
- Knosp, Rud.**, cannell, a brown aniline dye, 1874, 721.
- Knublauch, Oskar**, illuminating power of benzene, toluene, ethylene, and ether, 1881, A., 329.  
 — determination of ethylene and benzene vapour in coal gas, 1881, A., 850.  
 — preparation of standard acid, 1882, A., 1230.  
 — estimation of ammonia, 1882, A., 1230.  
 — determination of sulphur in coal gas, 1882, A., 1326.
- Knuth, Paul**, on a tribromobenzenesulphonic acid, 1877, ii., 465.
- Kobell, Wolfgang Franz Xaver (Ritter) von**, new reaction for bismuth, 1873, 531.  
 — on the later montebrasite of Des Cloizeaux (*hebronite*), 1873, 1113.  
 — kjerulfine, a new mineral from Bamle in Norway, 1873, 1206.  
 — wagnerite, 1873, 1207.  
 — tschermakite, a new felspathic mineral, 1874, 663.  
 — concentrated sulphuric acid as a test for molybdic acid, 1876, ii., 554.
- Koch, A.**, colouring matter containing sulphur derived from dimethyl-*p*-phenylenediamine, 1879, A., 628.  
 — a colouring matter containing sulphur from *p*-phenylenediamine, 1880, A., 110.
- Koch, Antal**, efflorescence of Glauber's salt at Klausenburg, 1878, A., 943.  
 — adular from Verespatak, 1879, A., 359.  
 — pseudobrookite and szaboite, new minerals, 1879, A., 441.  
 — new minerals from the andesite of Mount Arany, 1880, A., 616.  
 — mineral and rock enclosures in the basalt of the Persányer Gebirge, 1881, A., 703.
- Koch, Johann Jacob**, fisetin, 1873, 72.
- Koch, Karl Richard**, changes in the surface of platinum and palladium produced by oxygen polarization, 1879, A., 1005.

- Koch, L.**, manuring experiments on potatoes and barley, 1882, A., 1130.
- Koch, Robert**, method of photographing bacteria, 1879, A., 1046.
- researches on the cause of tuberculosis, 1882, A., 1120.
- Koch, Robert, and Gustav Alfred Wolffhügel**, disinfection by the aid of hot air, 1882, A., 1143.
- Köbig, Julius**. See **Rudolph Fittig**.
- Koechlin, Horace, and Otto Nikolaus Witt**, a new class of colouring matters, 1882, A., 675.
- Koechlin, Juste**, application of tannin, 1882, A., 787.
- Köchlin, Paul**. See **Karl Heumann**.
- Köhler, Hermann Adolph, and Max Quehl**, reactions of apomorphine, 1874, 589.
- Köhler, Hermann Adolph, and Schimpf**, the chemical relation of phosphorus to turpentine oil, and the action of the latter as an antidote in phosphorus poisoning, 1873, 179.
- Köhler, Hugo**, behaviour of hydrogen sulphide with carbon dioxide at a red heat, 1878, A., 372.
- decomposition of ethyl sulphates by gaseous hydrochloric acid, 1879, A., 137.
- action of ammonium sulphate on barium ethyl sulphate, 1879, A., 137.
- ethylamine, 1879, A., 219; 1880, A., 159.
- mercuric iodide, 1879, A., 602, 889.
- ethereal oils of some Ericaceæ, 1879, A., 641.
- substituted nitrogen chlorides, 1879, A., 780.
- mercuric chloriodide, 1879, A., 1017.
- chloro-derivatives of amines, 1880, A., 233.
- synthesis of phosphényl sulphochloride, 1880, A., 558.
- action of antimony pentachloride on phosphorus trichloride, 1880, A., 613.
- action of phosphorus trichloride on benzene, 1881, A., 91.
- action of phosphényl chloride on some chlorides, 1881, A., 97.
- Köhler, Hugo, and B. Aronheim**, a synthesis of phenylisobutane, 1875, 1189.
- Köhler, Hugo, and Carl Arnold August Michaelis**, isophosphophényl sulphide, 1877, ii., 449.
- phosphénylic ether, 1877, ii., 449.
- phenylphosphine and phosphobenzene, 1877, ii., 450.
- Köhler, Hugo**. See also **Carl Arnold August Michaelis**.
- Köhler, Wilhelm**, production of zinc by a continuous process in the blast furnace, 1878, A., 618.
- Koelle, Gust.**, derivatives of naphthol, 1881, A., 177.
- Koenen, Adolf von**, pumice from Launsbach, 1881, A., 393.
- König, Arthur**, estimation of retrograde phosphoric acid by ammonium citrate, 1880, A., 924; 1881, A., 464.
- estimation of small quantities of phosphoric acid, 1881, A., 644.
- influence of ammonia on the estimation of bicalcium phosphate, 1881, A., 759.
- absorptive capacity of humous matter, 1882, A., 889.
- König, Edmund**. See **Karl Zulkowski**.
- König, Franz**, preparation of succinic acid from tartaric acid by fermentation, 1881, A., 256; 1882, A., 715.
- detection of rosaniline in wine, 1881, A., 314.
- apparatus for studying the diffusion of carbon bisulphide in the ground, 1881, A., 650.
- König, Franz Josef**, determination of cellulose, 1873, 534; 1874, 497.
- digestibility of the fat of hay, 1873, 648.
- a new beech blight, 1873, 1156.
- replacement of lime in the bones, 1875, 95.
- on irrigation with spring or river water, 1878, A., 447.
- decomposition of bones by steam, 1879, A., 987.
- on marl, sea mud, etc., 1880, A., 60; 1882, A., 551.
- adulteration of rye bran with rice husks, 1880, A., 200.
- influence of factory waste water and gases on vegetation and soil, 1880, A., 497; 1882, A., 331.
- nutritive value of fruits, 1880, A., 733.
- action of water in the process of irrigation, 1881, A., 638.
- money value of feeding stuffs, 1881, A., 1067.
- analysis of mud, 1882, A., 550.
- contributions to the knowledge of Westphalian soils, 1882, A., 767.
- composition and use of peat, 1882, A., 769.
- composition of hay grown under the influence of different manures, 1882, A., 1127.
- gypsum manures, 1882, A., 1316.



- König, Franz Josef**, and **J. Kiesow**, nature of the fats in meadow hay, 1873, 648.  
 — a new hydrocarbon from vegetable fats, 1873, 1215.
- König, Franz Josef**, and **C. Krauch**, estimation of oxygen dissolved in water, 1880, A., 421.  
 — alteration in the composition of irrigating water and its action, 1882, A., 655.
- König, Franz Josef**, and **L. Mutschler**, estimation of free oxygen dissolved in water, 1878, A., 164.
- König, Franz Josef**, **J. Kiesow**, and **B. Aronheim**, constitution of plant fats, 1874, 597.
- König, Franz Josef** (and others), preparation and preservation of various fodders, 1882, A., 1128.
- König, George Augustus**, pachnolite and thomsenolite, 1877, ii., 119.  
 — hydrotitanite (a new mineral), 1877, ii., 173.  
 — tantalite from Yancey County, N. Carolina, 1877, ii., 281.  
 — Goldsmith's hexagonite, a variety of tremolite, 1877, ii., 720.  
 — the colouring matter of amazon stone from Pike's Peak, Colorado, 1877, ii., 720.  
 — zircon in the amazon stone of Pike's Peak, Colorado, 1877, ii., 720.  
 — occurrence of astrophyllite, arfvedsonite, and zircon in El Paso, Co. Colorado, 1878, A., 389.  
 — ankerite from Phoenixville, 1879, A., 604.  
 — simultaneous occurrence of grossular, zoisite, stilbite, and leidyite, a new species, 1879, A., 606.  
 — chronometry, an application of the blowpipe to quantitative analysis, 1879, A., 740.  
 — beegerite, a new mineral, 1882, A., 575.  
 — jarosite from a new locality, 1882, A., 577.  
 — action of charcoal on a solution of gold chloride, 1882, A., 809.
- König, Heinar**, action of hydrocyanic and hydrochloric acids on ethyl methylacetate, 1879, A., 706.
- Königs, Emil**, detection of coal gas in earth, 1880, A., 684.  
 — weighting of silk, 1880, A., 935.
- Koenigs, Wilhelm**, action of phosphorus pentachloride on ethenedisulphonic acid, 1875, 140.
- Koenigs, Wilhelm**, action of sulphurous acid and the sulphuric acids on diazo-compounds, 1878, A., 219.  
 — action of nitrous acid on benzenesulphonic acid, 1878, A., 573.  
 — action of fuming nitric acid and of nitrous acid on benzenesulphonic acid, 1879, A., 314.  
 — oxidation products of cinchonine, 1879, A., 471.  
 — nitroquinoline, 1879, A., 540.  
 — synthesis of quinoline, 1879, A., 540; 1880, A., 672.  
 — oxidation of cinchonine quinoline by potassium permanganate, 1879, A., 731.  
 — conversion of piperidine into pyridine, 1880, A., 404.  
 — action of phosphorus pentachloride and oxychloride on cinchonine hydrochloride, 1880, A., 673.  
 — constitution of cinchonine, 1882, A., 224.
- Koenigs, Wilhelm**. See also **Adolf von Baeyer**.
- Köppen, E. von**, physical and chemical changes which specular iron undergoes when smelted in the cupola for the Bessemer process, 1879, A., 840.
- Köppen, Rudolf**. See **Ernst Albert Schmidt**.
- Körner, Georg**. See **August Laubenhaimer**.
- Körner, Hermann**, *p*-dipropylbenzene and its derivatives, 1879, A., 142.
- Körner, Wilhelm**, on two nitrophenol-sulphonic acids, 1873, 757.  
 — researches on isomerism amongst the so-called aromatic substances containing six atoms of carbon, 1876, i., 204.  
 — constitution of veratric acid and veratrol, 1877, i., 88.  
 — products of the transformation of quinoline, 1882, A., 739.
- Körner, Wilhelm**, and **Pietro Corbetta**, on two new derivatives of phloretic acid, and on the constitution of that acid, 1875, 458.
- Körner, Wilhelm**, and **Angelo Menozzi**, elimination of nitrogen from tyrosine, 1882, A., 730.
- Körner, Wilhelm**, and **Giulio Monselise**, two benzenedisulphonic acids and their relations, 1877, i., 80.
- Körner, Wilhelm**, and **Emanuele Paternò**, iodobenzene-*p*-sulphonic acid, 1873, 757.
- Koeth, Dacl (Freiherr) von**, determination of the chemical peculiarities of soils and manures requisite for them;



- and on the action of soluble and reduced phosphates, 1880, A., 418.
- Koeth, Dacl** (*Freiherr*) von, clarification of must, 1882, A., 347.
- Koethe, G.**, Plessy's chrome-green, 1875, 673.
- Koethe, G.** See also *Carl Arnold August Michaelis*.
- Köttnitz, Max**, derivatives of mucic acid, 1873, 163.
- Koettstorfer, J.**, new method for detecting foreign fats in butter, 1879, A., 983, 1069.
- Koettstorfer, J.** See also *Franz Coelestin Schneider*.
- Kohlrausch, Friedrich**, electromotive force of very thin gas strata, 1873, 348.
- on the electrochemical equivalent of silver, 1874, 113.
- expansion of ebonite, 1874, 430.
- electric conducting power of water, 1877, i., 429.
- the electric conductivity of acids in aqueous solution, 1877, ii., 104.
- maximum density of a mixture of sulphuric acid and water, 1878, A., 704.
- Kohlrausch, Friedrich**, and **O. Grotian**, dependence of the electric conductivity of saline solutions upon the amount of salt contained in them and on their temperatures, 1875, 605.
- the electric conductivity of the chlorides of the alkaline earth metals and of nitric acid in aqueous solutions, 1875, 1149; 1876, i., 182.
- Kohlrausch, Otto**, influence of aluminium sulphate and lead acetate on the polarisation of sugar solutions, 1873, 92.
- method of obtaining comparable results in the commercial valuation of raw sugars, 1873, 298.
- action of ammonium sulphate containing sulphocyanate on the growth of plants, 1875, 179.
- analysis of Austrian beers, 1875, 1304.
- refining sugar by the use of alumina, 1878, A., 690.
- new process of extracting tannin by means of dialysis, 1881, A., 858.
- Kohn, Siegf.**, decomposition products of albuminoids, 1879, A., 389.
- Koken, J.** See *Karl Birnbaum*.
- Kokscharoff, Nicolai Iwan von**, crystallographic notices; mica from Vesuvius; jarosite of Beresowsk; occurrence of native lead in Russia; on the calcite of Russia, 1876, i., 525.
- staurolite from the Ural; scorodite from the Ural, 1876, i., 887.
- Kokscharoff, Nicolai Iwan von**, materials for the mineralogy of Russia; breunnerite; iron pyrites; mica, 1881, A., 523.
- Kolb, Jules**, composition of chloride of lime, 1873, 200.
- amount of real acid in sulphuric acid of various densities, 1874, 193.
- formation of superphosphate of lime, 1874, 657.
- analysis of superphosphates, 1874, 1102.
- Kolbe, Adolf Wilhelm Hermann**, remarks on Berthelot's paper, "On sodium ethylate and the formation of propionic acid from carbon monoxide," 1874, 247.
- on salicylic acid; *p*-oxybenzoic acid; *isocresol* (preliminary notices), 1874, 373.
- synthesis of *p*-oxybenzoic acid, 1874, 477.
- on some remarkable properties of salicylic acid and a new way of preparing it, 1875, 260.
- preparation of pure *p*-oxybenzoic acid from salicylic acid, 1875, 459.
- further communication on the action of salicylic acid, 1875, 460.
- on the chemical nature of salicylic acid, 1876, i., 255.
- practical applications of salicylic acid, 1876, i., 991.
- testing of salicylic acid, 1876, ii., 663.
- preparation of hydriodic acid, 1877, ii., 109.
- hydrazine and its compounds, 1877, ii., 457.
- basicity of dithionic acid, 1880, A., 5.
- destructive action of wood on salicylic acid, 1880, A., 520; 1881, A., 212.
- di- and tri-carbinols, 1881, A., 82.
- Kolbe, Adolf Wilhelm Hermann**, and **Zitowitsch**, on the gases enclosed in certain lignites, 1873, 43.
- Kolbe, Adolf Wilhelm Hermann**. See also *Ernst Sigismund Christian von Meyer*.
- Kollarits, Michael**, and **Victor Merz**, synthesis of aromatic ketones, 1873, 1035.
- Kommrath, H.**, chemical affinity, 1877, i., 165; ii., 403.
- Konigel-Weisberg, J.**, action of chlorine on barium hydrate, 1879, A., 505.
- action of chlorine on strontia, 1879, A., 596.
- Koninck, Lucien Louis de**, on some Belgian minerals, 1873, 1114.

- Koninck, Lucien Louis de**, action of fused alkaline carbonates on platinum, 1880, A., 581.  
 — preparation of hydrochloric acid gas, 1881, A., 138.  
 — solution of bromine as a reagent, 1881, A., 193.
- Koninck, Lucien Louis de**, and **Louis Thiriart**, aluminium phosphate, 1881, A., 465.
- Konowaloff, Dmitri P.**, isobutylene, 1881, A., 400.  
 — action of nitric acid on isodibutylene, 1881, A., 400.  
 — vapour tension of mixed liquids, 1881, A., 1093; 1882, A., 136.
- Kopfer, Ferdinand**, the action of dilute mineral acids on bleaching powder, 1875, 713.  
 — use of platinum in the ultimate analysis of carbon compounds, 1876, i., 660; 1877, i., 228.
- Kopp, Adolph**, transformation of the three bromocinchonines into the corresponding oxy bases, 1877, i., 323.  
 — on the so-called *Resina quaiaci aromatica v. odorata*, 1877, i., 716.
- Kopp, Emil**, determination of melting points, 1873, 30.  
 — comparative examination of purpurates and isopurpurates, 1873, 75.  
 — diphenylamine as a test for nitrous and nitric acids, 1873, 91.  
 — brasilin and resorcin, 1873, 899.  
 — the so-called "chemical carbon," 1873, 1276.  
 — estimation of olive oil in Turkey-red dyeing, 1876, i., 761.  
 — analysis of cotton dyed Turkey-red, 1876, i., 782.  
 — estimation of chlorine, bromine, and iodine in organic bodies, 1876, i., 961.
- Kopp, Hermann**. See **Rudolph Fittig**.
- Kopp, Hermann Franz Moritz**, Naumann's method of determining molecular weights, 1878, A., 643.  
 — determination of atomic weights and the use of isomorphism for the same, 1879, A., 769.  
 — development of a crystal of one substance in the solution of another, 1882, A., 1269.
- Koppe, Paul**. See **Ferdinand Tiemann**.
- Koppeschaar, Willem Fredrik**, volumetric estimation of phenol, 1877, i., 746.
- Koppmayer, M.**, estimation of sulphur in pig iron, malleable iron, and steel, 1874, 496.
- Koppmayer, M.**, specific gravities of Bessemer steel containing varying amounts of carbon, 1874, 831.  
 — on Brunner's colorimetric method for estimating manganese in steel, iron, and ores, 1874, 1009.
- Kormann, Walter**. See **Robert Sachsse**.
- Korschelt, Oskar**, determination of phosphorus in pig iron and iron ores, 1877, ii., 800.  
 — "saki," the alcoholic drink of the Japanese, 1879, A., 413.
- Kosmann, Constant Philippe**, chemical nature of digitalin, 1875, 650.  
 — study of the ferments contained in plants, 1877, i., 488.  
 — studies on glycerin, cellulose, and gum; change of glycerin into glucose, 1877, ii., 876.
- Kossel, Albrecht Carl Ludwig Martin Leonhard**, peptones, 1876, ii., 535; 1879, A., 811.  
 — phenol ethers in the animal body, 1881, A., 631.  
 — distribution of hypoxanthine in the animal and vegetable kingdom, 1882, A., 79.  
 — origin of hypoxanthine in the organism, 1882, A., 759.
- Koster, A.**, estimation of hydrocyanic acid in bitter almond water, 1874, 94.  
 — testing potassium iodide for chloride, 1874, 710.  
 — impurities in sodium bicarbonate, 1881, A., 138.
- Kostitscheff, Paul A.**, phosphoric acid in the soil, 1881, A., 457.
- Kottal, Franz**, salts of fermentation caproic acid, 1874, 249.
- Koukol-Yasnopolsky, W.**, fermentation of the liver and formation of indole, 1876, ii., 211.
- Koyl, Charles Herschel**, colours of thin blowpipe deposits, 1881, A., 489.
- Krämer, C.**, separation of manganese from iron, 1877, ii., 805.
- Kraemer, Gustav**, on the products of the oxidation of isobutyl alcohol and on the trichloracetone obtained from the so-called isobutyl aldehyde, 1874, 676.  
 — quantitative determination of acetone in methyl alcohol, 1880, A., 826.
- Kraemer, Gustav**, and **Max Grodzki**, on crude and pure wood spirit, 1875, 1171.  
 — methods of estimating methyl alcohol in the manufacture of colouring matters, 1877, ii., 229.  
 — researches on crude wood spirit, 1877, ii., 291.

- Kraemer, Gustav**, and **Max Grodzki**, the acids of wood vinegar and their connection with the so-called wood oils, 1879, A., 43.
- influence of constituents of wood spirit on the production of dimethylaniline, 1880, A., 802.
- Kraemer, Gustav**. See also **Max Grodzki**.
- Kraft, Friedrich**, thiobenzene and thioaniline, 1874, 806; 1875, 153.
- formation of bromine substitution products, 1876, i., 71.
- reactions of certain fatty bodies under energetic chlorination, 1876, ii., 503; 1877, ii., 726.
- the oxychlorination of benzene, 1877, ii., 748.
- distillation of castor oil under reduced pressure, 1878, A., 292.
- undecolic acid, 1878, A., 853.
- conversion of undecylenic acid into undecylic acid, 1879, A., 306.
- lauric acid and its conversion into undecylic acid, 1880, A., 34.
- tridecylic, pentadecylic, and margaric acids, 1880, A., 34.
- preparation of lauric, myristic, palmitic, and stearic aldehydes, 1880, A., 866.
- normal paraffins, Part I., 1882, A., 1271.
- normal paraffins, a law of volumes for the liquid state, Part II., 1882, A., 1272.
- Kraft, Friedrich**, and **Franz Becker**, decomposition of naphthalene tetrachloride, 1876, ii., 518.
- Kraft, Friedrich**, and **Victor Merz**, on the ultimate action of chlorine on some hydrocarbons, 1876, i., 539.
- Kraft, Friedrich**, and **Bernhard Stauffer**, nitriles of the higher members of the acetic series, 1882, A., 1273.
- Kraft, Otto**, salts of tetracrylic and diaterpenylic acids, 1878, A., 28.
- Kraft, Otto**. See also **Rudolph Fittig**.
- Kraft, August**, comparison of the different processes for estimating alcohol, 1873, 1262.
- Krahe**, cultivation of osiers, 1882, A., 888.
- Krakau, Alexander A.**, quinoline, 1881, A., 287, 655.
- Kramberger, D. M.**, pilarite, a new mineral of the chrysocolla group, 1882, A., 582.
- Kramer, Ernst**, feeding value of Alpine hay, 1881, A., 1065.
- loss of starch occasioned by the sprouting of potatoes, 1882, A., 242.
- Kramers, Johan Gerhard**, *m*-chlorophenol and its sulphonic acids, 1875, 157.
- decomposition of phenol at a red heat, 1877, ii., 613.
- decomposition of chlorobenzene at a red heat, 1877, ii., 885.
- chlorination of diphenyl, 1877, ii., 898.
- Kramps, J. M. A.**, contribution to a knowledge of the ureides, 1880, A., 630.
- Kramps, J. M. A.** See also **Louis Aronstein**.
- Krandauer, Michael**, analyses of waters for brewing, 1879, A., 1078.
- Krandauer, Michael**. See also **Carl Joseph Lintner**.
- Krašan, Franz**, effect of heat on the germination of wheat, 1874, 597.
- Kratschmer, Florian**, quantitative estimation of glycogen, dextrin, and amyllum, 1882, A., 558.
- Kratschmer, Florian**. See also **Josef Nowak, Josef Seegen**.
- Kratter, Julius**, adipocere, 1882, A., 760.
- Krauch, C.**, estimation of some of the chief adulterations of ground coffee, 1878, A., 449.
- unorganized ferments in plants, 1878, A., 996; 1880, A., 175.
- woody fibre estimation and its defects, 1880, A., 588.
- report on the methods of estimating cellulose, and on their defects, 1880, A., 761.
- peptone-forming ferment in plants, 1882, A., 880.
- composition of the milk of wet nurses, 1882, A., 986.
- Krauch, C.** See also **Franz Josef König, L. Mutschler**.
- Kraus, Carl**, autumnal colouring of leaves and formation of vegetable acids, 1873, 1049.
- sugar estimation, 1874, 714.
- artificial production of chlorophyll in living plants in the absence of light, 1878, A., 239; 1880, A., 57.
- growth of sprouts in potatoes, 1881, A., 60.
- influence produced on the growth of the plant by previously steeping the seed, 1881, A., 300.
- the influence exerted on the growth of potato and Jerusalem artichoke plants by allowing the "sets" to decay before planting, 1881, A., 456.
- Kraus, Fr.**, determination of gold and silver by quartation with cadmium, 1880, A., 679.

- Kraus, Fritz**, estimation of magnesia in urine by titration, 1882, A., 775.
- Kraus, Gregor**, water distribution in plants, 1882, A., 327.
- Krause, G.**, examination of beetroots for grape sugar, 1874, 1015.
- decomposition of magnesium chloride, 1875, 1239.
- mineralogical notices from the mines at Stassfurt and Leopoldshall, 1876, i., 345.
- new discoveries in the Stassfurt salt mines, 1876, i., 346.
- reichhardite, a new mineral from Stassfurt, 1876, i., 347.
- estimation of potassium as platino-chloride, 1876, i., 441.
- purification of potassium chloride by washing in the chemical works of Stassfurt and Leopoldshall, 1876, i., 447.
- examination of the *Fructus Papaveris* for morphine, narcotine, and meconic acid, 1876, i., 777.
- Krause, Hugo**, and **Georg Anton Salomon**, formation of xanthine derivatives from albumin, 1879, A., 471.
- Krause, Julius**, new method of preparing thallium, 1876, i., 519.
- Krause, Otto**, magnesium oxychloride, 1873, 136.
- Krause, S. F. Arthur**, *p*-phenylenediamine, 1876, ii., 638; 1879, A., 462.
- Kraushaar, Carl**, decomposition of soda waste for the preparation of sulphur, 1878, A., 171.
- Kraut, Karl**, glycocine derivatives, 1876, i., 61; ii., 625.
- cymene and cymyl alcohol, 1878, A., 973.
- mercuric iodide, 1879, A., 772.
- belladonnine, 1880, A., 410.
- filter paper and filtering, 1880, A., 573.
- inflammation by nitric acid, 1881, A., 475.
- history of tropine, 1882, A., 415.
- compounds of bismuth iodide with organic bases, 1882, A., 528.
- Kraut, Karl**, and **Georg Merling**, addition compounds of atropic acid, 1881, A., 425.
- Kraut, Karl**, **Martin Nahnsen**, and **Ehler Cuno**, pyrophosphates of lithium, lithium-sodium, and lithium-potassium, 1876, ii., 603.
- Kraut, Karl**, **Hjalmar Orrmann**, and **Wilhelm Küsel**, estimation of potassium as perchlorate, 1876, i., 440.
- Kraut, Karl**, **Otto Rhoissopoulos**, and **Ferdinand Moritz Meyer**, preparation and properties of ethylenediamine, 1882, A., 939.
- Kraut, Karl**. See also **Heinrich Precht**.
- Kreitmaier, Benedict**, on ratanhia, 1875, 1038.
- Krelage**. See **A. E. van Rojen**.
- Krell, G.**, some substitution products of dimethylaniline, 1873, 279.
- estimation of methyl alcohol in wood spirit, 1874, 291.
- Krenner, Josef Alexander**, telluric silver from Botés in Transylvania, 1881, A., 364.
- Kressner, G.**, synthesis of pyrotartaric acid by means of ethylic  $\alpha$ -methyl-acetosuccinate, 1878, A., 783.
- Kressner, M. G.** See **B. E. Dietzell**.
- Krestownikoff, A.**, decomposition of ethyl isosuccinate by heat, 1877, ii., 442.
- acrolein hydrochloride, 1878, A., 23.
- $\beta$ -chloropropaldehyde, 1880, A., 234.
- homoitaconic acid, 1881, A., 801.
- Krestownikoff, A.** See also **Wladimir B. Markownikoff**.
- Kretschy, Michael**, can the indirect methods for the determination of alkalis be made either to check each other or to serve as a check on the direct methods? 1876, ii., 652.
- trisulpho-oxybenzoic acid, 1878, A., 731.
- kynuric acid, 1880, A., 44; 1881, A., 827.
- Kretschy, Michael**. See also **Ludwig (Ritter) Barth von Barthenau**.
- Kretzschmar, Alfred**, oxysulphocarbonate of ammonia, 1874, 361.
- action of acid chlorides on amides, 1875, 563.
- action of acetyl chloride and of benzoyl chloride on certain amides, 1877, i., 614.
- Kretzschmar, Alfred**, and **Ludwig Rudolph Friedrich Salomon**, action of chlorides on amides, 1874, 790.
- Kretzschmar, Max**, analysis of butter fat, 1878, A., 344.
- Kreusler, Gottfried Adolf Ernst Wilhelm Ulrich**, determination of nitrogen in albuminoids, 1874, 1106; 1880, A., 350.
- behaviour of cane sugar under the influence of light, 1875, 748.
- method for the continuous measurement of the intensity of daylight and its application to physiologicobotanical investigations, 1880, A., 188.



- Kreusler, Gottfried Adolf Ernst Wilhelm Ulrich** (and others), digestibility of steamed hay, 1880, A., 498.
- Krey, O.**, chlorinated acetals and some derivatives, 1877, i., 295.
- Kriechbaumer, A.** See *Emil Erlenmeyer*.
- Krieger, Jos.**, application of potatoes and undried malt in the preparation of yeast, 1880, A., 200.
- Kriewitz**, cultivation of potatoes, 1882, A., 83.
- Kriloff, Paul.** See *Flavian M. Flawitzky*.
- Krinos, G.**, trimellitic acid, 1878, A., 230.
- Krocker, F.**, adulteration of bone-meal, 1880, A., 354.  
— disease in sheep caused by lupins, 1880, A., 916.  
— analysis of plantain seeds, 1881, A., 1066.
- Krocker, Hermann**, and *Hugo Grahl*, manuring experiments with various phosphates, 1881, A., 1167; 1882, A., 770.
- Krouchkoll**, variation in friction produced by electrical polarisation, 1882, A., 1257.
- Kroupa, Franz**, experiments on the recovery of sugar from molasses, 1882, A., 784.
- Krüger, Friedrich**, isomeric sulphine compounds, 1877, i., 186.  
— fluorescein as an indicator in titration, 1877, i., 341.
- Krüger, Julius**, quick reduction of silver from old solutions by means of phosphorus, 1873, 245.
- Krüss, Andres Hugo**, improved slit for spectroscope, 1882, A., 1229.
- Krüss, Gerhard**, constitution of solutions, 1882, A., 1018.
- Krug, O.**, preservation of wood, 1877, ii., 244.
- Kruis, Karl**, formation of aniline-black by means of metallic salts, 1874, 1120.
- Kruse, Heinrich Gustav**, analysis of the roots of *Filix mas*, 1877, i., 336.
- Kruseman, Hendrik Dirk**, reduction of levulose, 1877, i., 293.
- Krusemark, Paul.** See *Rudolph Fittig*.
- Krutwig, Jean**, action of chlorine on inorganic silver salts, 1881, A., 354.  
— detection of traces of silver in lead ores, 1882, A., 774.  
— silver plumbite and quantitative estimation of silver in lead ores, 1882, A., 1134.
- Kubel, Wilhelm**, basic magnesium acetate, 1882, A., 825.
- Kühn, Gustav, A. Haase**, and *II. Bäsecke*, digestibility of lucerne in the fresh state and as hay, 1873, 1156.
- Kühn, Julius**, disease in sheep caused by lupins, 1880, A., 916.  
— investigation into the cause of beet sickness in soils, 1881, A., 634.  
— prevention of lupin sickness, 1881, A., 934.  
— the sand vetch, a new fodder plant, 1881, A., 1065.
- Kühn, Julius** (and others), researches on plant parasites and plant diseases, 1882, A., 888.
- Kühne, Willie**, indole from albumin, 1875, 773.
- Kühnemann, Gotthold**, occurrence of crystallisable sugar in germinating cereals, 1875, 779.  
— examination of barley for sugar and dextrin, 1875, 906.  
— organic constituents of barley and malt, 1877, i., 224.  
— constituents of hops, 1879, A., 171.
- Külz, Rudolph Eduard**, estimation of uric acid in diabetic urine, 1873, 536.  
— estimation of sulphur and of taurocholic and glycocholic acids in bile, 1873, 536.  
— on glycogen from the human liver, 1876, ii., 646.  
— is grape sugar a normal constituent of urine? 1876, ii., 647.  
— maltose, 1881, A., 567.  
— specific rotatory power of glycogen, 1881, A., 569.  
— Schtscherbakoff's A, B, C, and D glycogen, 1881, A., 570.  
— formation of glycogen in the liver, 1881, A., 626.  
— influence of severe bodily exercise on the amount of glycogen in the liver, 1881, A., 626.  
— influence of cold on the amount of glycogen in the liver, 1881, A., 627.  
— does injection of sodium carbonate into the portal vein cause the disappearance of glycogen from the liver? 1881, A., 627.  
— nature of the sugar found in the liver after *rigor mortis*, 1881, A., 628.  
— amount of glycogen in the liver and muscles after death, 1881, A., 628.  
— does glycogen occur in the blastoderm of the chick? 1881, A., 629.  
— formation of glycogen in muscle, 1881, A., 629.  
— glycogen in the liver of hibernating animals, 1881, A., 629.



- Külz, Rudolph Eduard**, quantitative estimation of glycogen, 1881, A., 655.  
 — urochloralic acid, 1882, A., 76, 1116.  
 — glycogen, 1882, A., 1043.  
 — cystine, 1882, A., 1206.
- Külz, Rudolph Eduard**, and **Arthur Bornträger**, elementary composition of glycogen, 1881, A., 569.  
 — action of mineral acids on glycogen, 1881, A., 1186.
- Külz, Rudolph Eduard**, and **Ernst Frerichs**, on the influence which tying the *ductus choledochus* exerts upon the amount of glycogen in the liver, 1877, i., 221.
- Künzel, C.**, working up of tin plate scraps, 1874, 1186.  
 — influence of chlorine on the properties of certain metals, 1875, 387.
- Küsel, Wilhelm**. See **Karl Kraut**.
- Küstel, Guido**, testing ores for tellurium and selenium, 1874, 709.
- Kuhara, Mitsuru**, on the red colouring matter of the *Lithospermum erythrorhizon*, 1879, T., 22.  
 — method for estimating bismuth volumetrically, 1880, A., 753.  
 — phthalimide, 1881, A., 1039.
- Kuhara, Mitsuru**. See also **Ira Remsen**.
- Kuhlberg, Alfons von**. See **Fedor F. Beilstein**.
- Kuhlmann, F.**, explosion of a platinum still used for concentrating sulphuric acid, 1880, A., 517.
- Kuhlmann, Karl Friedrich**, bromine and iodine in apatite, 1873, 357.  
 — the action of sulphurous oxide upon nitric oxide and the use of nitric oxide for the recovery of manganese peroxide from the manganese liquors, 1874, 829, 924.
- Kuijper, H. F.**, chemico-legal detection of alcohol, 1873, 92.
- Kullhem, H. A.**, action of sodium amalgam on dinitroheptylic acid, 1873, 1019.  
 — isononylic acid and isononylamide, 1875, 354.  
 — isononylamide, 1875, 884.
- Kundt, August**, explanation of the experiments of Dufour and Merget upon the diffusion of gases, 1878, A., 7.
- Kunkel, Adam Joseph**, electrical researches in plant and animal forms, 1882, A., 638.
- Kunstmann**. See **Hermann Hager**.
- Kupferberg, Hugo**, conversion of *p*-oxybenzoic acid into salicylic acid, 1876, i., 926.
- Kupferberg, Hugo**, oxybenzoic acid, 1878, A., 318.
- Kupffer, Alexander**. See **Fedor F. Beilstein**.
- Kupfferschläger, Isidore F. J.**, test for tarry impurities in commercial ammonia, 1875, 1289.  
 — separation of zinc from cadmium, 1881, A., 849; 1882, A., 97.  
 — preparation and use of ammonium molybdate solution, 1882, A., 554.
- Kurbatoff, Apollo**, preparation of  $\alpha$ -sulphopropionic acid, 1873, 873.  
 — calamus oil, 1874, 259.  
 — ethylic ethylsulphonate, 1875, 57.  
 — essential oils, 1875, 90.
- Kurbatoff, Apollo**. See also **Fedor F. Beilstein**.
- Kutscheroff, M.**, monobromethylene, 1881, A., 882.  
 — direct addition of water to the hydrocarbons of the acetylene series, 1881, A., 883.  
 — oxidation of cholic acid, 1881, A., 926.
- Kyle, John J. J.**, composition of the rivers Parana and Uruguay, 1878, A.; 959.
- Kynaston, Josiah W.**, production of aluminium sulphate free from iron from aluminous minerals containing iron, 1881, A., 666.

## L.

- Laar, Conrad**, sulphanilic acid, 1880, A., 320.  
 — azophenyldi-*p*-sulphonic acid, 1882, A., 194.
- Labesius, Fesca's** separator, 1882, A., 124.
- Labhardt, Emil**, nitration of bromonaphthalene, 1879, A., 721.
- Laborde, E.** See **Aimé Girard**.
- Lachmann, G.**, tolylthiocarbimide, 1879, A., 935.
- La Coste, Wilhelm**, benzarsinic acid and its derivatives, 1881, A., 168, 903.  
 — bromine derivatives of quinoline, 1881, A., 741.  
 — halogen derivatives of quinoline, 1882, A., 978.  
 — behaviour of the addition products of quinoline and monohaloid paraffin derivatives with silver oxide, 1882, A., 980.  
 — addition products of the bases obtained from quinoline and the alkyl chlorides and iodides, 1882, A., 1112.

- La Coste, Wilhelm, and Carl Arnold August Michaelis**, mono- and diphenyl compounds of arsenic, 1879, A., 161.
- triphenylarsine and its derivatives, 1879, A., 162.
- monotolyl compounds of arsenic, 1879, A., 163.
- aromatic arsenic compounds, 1880, A., 396.
- Lade, Aug.** See **Adolph Claus**.
- Ladenburg, Albert**, application of electrolysis to the determination of molecular weights, 1873, 26.
- reduction of ethyl *o*-formate, 1873, 48.
- reduction products of silicic ether and its derivatives, 1873, 49.
- pentachlorobenzenes, 1873, 166, 499.
- action of zinc ethyl on silicon methyl ether, 1873, 488.
- attempt to synthesize tyrosin, 1873, 642.
- aromatic compounds containing silicon, 1873, 1026; 1874, 803.
- silicoacetic acid, 1874, 40.
- isomeric di-substitution derivatives of benzene, 1875, 887.
- derivatives of diamines, 1875, 1036; 1876, i., 933.
- on the constitution of benzene, 1875, 1188; 1876, i., 401; 1877, ii., 747.
- nitrobenzoic acids, 1875, 1263.
- constitution of mesitylene, 1876, i., 354.
- diamidotoluene, 1876, i., 401.
- condensation in the ortho-series, 1877, i., 302; ii., 752.
- on ammonium compounds, 1877, ii., 570, 754.
- constitution of oxythymoquinone, 1877, ii., 891.
- quantivalence of nitrogen, 1878, A., 10.
- derivatives of *o*-toluidine, 1878, A., 54.
- method for distinguishing between *o*-diamines and their isomerides, 1878, A., 571.
- aldehydines, a new class of bases, 1878, A., 571.
- absolute boiling points, 1878, A., 633.
- remarks on Schiff's paper on aldehyde derivatives of amines and carbamides, 1878, A., 669.
- experimental determination of position, 1879, A., 232.
- simple method for preparing aldehydines, 1879, A., 233.
- Ladenburg, Albert**, diisobutylamine, 1879, A., 703.
- derivatives of tropic acid, 1879, A., 720.
- artificial atropine, 1879, A., 733.
- tropidine, 1879, A., 733; 1880, A., 675.
- artificial alkaloids, 1880, A., 410.
- alkaloids of *Belladonna*, *Datura*, *jusquiame*, and *duboisia*, 1880, A., 561.
- hyoscyamine, 1880, A., 674.
- hyoscyamine, and atropine, 1880, A., 674.
- duboisine, 1880, A., 675.
- tropeine derivatives, 1880, A., 714; 1881, A., 420; 1882, A., 984.
- homatropine, 1880, A., 815.
- hyoscyne, 1881, A., 56; 1882, A., 229.
- constitution of tropine, 1881, A., 263.
- the mydriatic or pupil dilating alkaloids, 1881, A., 446.
- alcamines, 1881, A., 1157.
- alkines, 1882, A., 165, 1193.
- tropine, 1882, A., 216.
- decomposition of tropine, 1882, A., 216, 983, 1206.
- attempted synthesis of tropine and its derivatives, 1882, A., 534.
- piryene, 1882, A., 983.
- Ladenburg, Albert, and Eugène Demole**, ethene chlorhydrate, 1874, 37.
- Ladenburg, Albert, and Adolph Engelbrecht**, derivatives of thymol, 1878, A., 60.
- some phenylaldehydines, 1879, A., 234.
- Ladenburg, Albert, and Georg Meyer**, daturine, 1880, A., 482.
- Ladenburg, Albert, and Leopold Rügheimer**, the aldehydines, 1879, A., 233.
- *o*-tolylenediamine derivatives, 1879, A., 715.
- synthesis of tropic acid, 1880, A., 472; 1881, A., 171.
- Ladenburg, Albert, and Oscar Struve**, on the quantivalence of nitrogen, 1877, ii., 838.
- Ladenburg, Albert.** See also **Charles Friedel**.
- Ladley, Dominic William**, obituary notice of, 1881, T., 190.
- Ladureau, Albert**, influence of the time of manuring in beet cultivation, 1879, A., 825.
- nitrates in sugar beets, 1879, A., 826.
- cultivation of sugar beet, 1880, A., 736, 917.
- part played by fat during the germination of seeds, 1881, A., 59; 1882, A., 883.

- Ladureau, Albert**, chemical composition of linseed, 1881, A., 116, 753.  
 — utilisation of residues, 1882, A., 248.  
 — utilisation of sewage, 1882, A., 248.  
 — maize cake from distilleries, 1882, A., 671.  
 — phosphoric acid in arable soils, 1882, A., 767.  
 — manuring with phosphates in Département du Nord, 1882, A., 1228.
- Lafaurie, J.**, solid preparation of bisulphide of carbon for vines, 1881, A., 482.
- Lagermark, Hermann I.**, isomeric iodo-bromethylenes, 1874, 240, 1151.  
 — tetrolic acid, 1879, A., 782; 1881, A., 413.
- Lagermark, Hermann I.**, and **Alexander P. Eltekoff**, action of sulphuric acid on acetylene, 1877, ii., 583; 1879, A., 780.
- Lagrange, Prosper**, purification of sugar, 1874, 299; 1875, 490.  
 — volumetric estimation of copper, 1875, 186, 382.  
 — action of barium hydrate on certain mineral and organic compounds in beet-root products, 1875, 675.  
 — action of ammonium sulphate in the cultivation of beetroot, 1875, 909.  
 — action of mineral salts on the crystallization of sugar, and the determination of their coefficient, 1876, i., 805.
- Laiblin, Richard**, nicotine, 1878, A., 432.  
 — nicotine and nicotinic acid, 1879, A., 808.  
 — bromo-derivatives of nicotine, 1880, A., 897.
- Lajoux, Henri**, a method of determining the exact solubility of salts, 1876, i., 184.
- Lako, S.**, xyleneol from *m*-xylene, 1876, ii., 634.
- Lalande, Félix de**, synthesis of purpurin, 1875, 69.
- Lalande, Félix de**, and **Maurice Prud'homme**, reply to criticism on the authors' method of preparing chlorine, 1873, 1104.
- Lalande, Félix de**. See also **Paul Schützenberger**.
- Lamansky, S.**, heat spectrum of solar light and of the lime light, 1873, 349.  
 — Stokes's law, 1879, A., 862.  
 — fluorescence, 1881, A., 214.
- Lamattina, L.**, detection of artificial colouring matter in wines, 1876, ii., 669.
- Lambert, Charles**, obituary notice of, 1877, i., 504.
- Lambert, Samuel Waldron**. See **Russell H. Chittenden**.
- Lambert, T.** See **Charles Romley Alder Wright**.
- Lamy, A.**, notice on the mutual action of hydrochloric acid and oxygen on certain metallic oxides in producing a continuous stream of chlorine (*Deacon's process*), 1873, 1103.  
 — the present state of the sugar industry in France, and a few experiments on the use of lime in the clarifying process, 1877, i., 116.  
 — solubility of lime in water, 1878, A., 373.
- Lan, Charles**, effects of compression on steel, 1882, A., 1145.
- Land, Wm. J.**, estimation of sulphuretted hydrogen in mineral waters, 1874, 1007.
- Landauer, John**, a blowpipe stand, 1876, i., 37.  
 — a self-acting blowpipe of simple construction, 1876, i., 517.  
 — absorption spectra, 1879, A., 101.  
 — absorption spectra of chrysoidine and related azo-colouring matters, 1881, A., 591.
- Landgrebe, Oscar**, cyanoguanidines, 1878, A., 216; 1879, A., 53.  
 — oxidation of ditolylparabanic acid, 1879, A., 62.
- Landmann, B.** See **Carl Arnold August Michaelis**.
- Landolph, Fr.**, derivatives of eymene, 1873, 1227.  
 — new derivatives of anethol, 1876, i., 246, 705; 1880, A., 384.  
 — on the products of reduction and the composition of anethol, 1876, ii., 79.  
 — action of boron fluoride on carbon compounds, 1877, ii., 863; 1878, A., 482, 774.  
 — action of boron fluoride on anethol; properties of hydroboric fluoride, 1878, A., 576.  
 — action of boron fluoride on camphor, 1878, A., 586.  
 — a new method of synthesis of the hydrocarbons, 1878, A., 721.  
 — action of boron fluoride on acetone, 1879, A., 914.  
 — two new hydrofluoboric acids and ethylenefluoboric acid, 1880, A., 28.  
 — analysis of organic compounds containing fluorine and boron, 1880, A., 61.
- Landolt, Al.** See **Wilhelm Weith**.
- Landolt, Hans Heinrich**, refraction equivalents of the elements carbon, hydrogen, and oxygen, 1873, 460.  
 — relations between the molecular rotatory power of tartaric acid and the tartrates, 1874, 41.

- Landolt, Hans Heinrich**, on the specific rotatory power of substances in solution, 1876, ii., 371.
- on the specific rotatory power of camphor, 1876, ii., 373.
- use of the magic lantern in chemical demonstrations, 1877, i., 683.
- optical rotation, 1878, A., 1, 457.
- inversion of the rotation of optically active substances, 1881, A., 257.
- multiples of the rotatory powers of organic compounds, 1881, A., 403.
- T. Thomsen's law of multiple proportions, 1881, A., 795.
- molecular refraction of liquid carbon compounds, 1882, A., 909.
- Landrin, Edouard**, new method of producing stucco, 1874, 1188.
- on the causes which modify the setting of plaster; new cements of plaster and lime, 1875, 106.
- manufacture of paper from the gombo (*Hibiscus esculentus*), and other industrial applications of this plant, 1875, 387.
- ammoniacal citrates 1878, A., 785; 1882, A., 604.
- solubility of calcium aluminates in water, 1882, A., 903.
- Landrin, Edouard**. See also *Pierre Paul Dehérain*.
- Landsberg, E.**, fate of morphine in the animal body, 1882, A., 543.
- Landsberg, Ludwig**. See *Adolf von Baeyer*.
- Landshoff, Ludwig**, methyl derivatives of  $\alpha$ -naphthylamine, 1878, A., 587.
- Landshoff, Ludwig**. See also *Carl Theodor Liebermann, Ferdinand Tie-mann*.
- Landwehr, Herm. Ad.**, albuminoids of the *Vesicula seminalis* in guinea pigs, 1882, A., 543.
- the mucin of *Helix pomatia* and a new carbohydrate (*achrooglycogen*) from the same, 1882, A., 708.
- Lanfrey, Amedée**, improvements in the manufacture of certain explosive compounds, 1879, A., 422.
- Lang, Carl**, on the porosity of some building materials, 1876, i., 800.
- heat capacity of soils, 1879, A., 958.
- Lang, Heinrich Otto**, parallel fibre formation and columnar separation, 1876, i., 526.
- garnet from the erratic gneiss of Wellen, near Bremen, 1879, A., 361.
- Lang, Johan**, derivatives of the bile acids, 1876, ii., 533; 1877, i., 481.
- Lang, Victor (Ritter) von**, crystallographic notes, 1873, 471.
- influence of temperature on the circular polarisation of quartz, 1876, ii., 265.
- Langbein, Georg**, potassium iodide from cuprous iodide, 1874, 1060.
- South American saltpetre, 1879, A., 1073.
- use of bromine in the analysis of nickel and cobalt, 1882, A., 99.
- Lange, August**, diphenylthiohydantoin, 1879, A., 651.
- Lange, August**. See also *Carl Theodor Liebermann*.
- Lange, Ferdinand**, the physiological action of ammonium salts, 1876, i., 723.
- Lange, H.**, action of phosphorus trichloride on toluene, 1875, 1189.
- Lange, H.** See also *Carl Arnold August Michaelis*.
- Lange, Oscar**, conversion of glycerin into acetone, 1873, 627.
- a polymeride of hydrocyanic acid, 1873, 628.
- Lange, R.** See *Eduard Lippmann*.
- Lange, Wichard**, silicon compounds in plants, 1878, A., 682.
- Langenbeck, B. von**, tripolite compared with gypsum, 1882, A., 116.
- Langer, Carl**, laws of substitution of aromatic amines, 1882, A., 954, 1058.
- Langer, Ludwig**, chemical composition of human fat at different ages, 1882, A., 240.
- Langer, Theodor**, analysis of the mineral water of Mattigbad, Mattighofen, Upper Austria, 1873, 1012.
- Langer, Theodor**, and *Wilhelm Schultze*, carbonic anhydride in beer, 1880, A., 774.
- Langfeldt**, destruction of microscopic animals in potable waters, 1881, A., 1179.
- Lankester, Edwin Ray**, contribution to the knowledge of hæmoglobin, 1873, 398.
- Lankester, Edwin Ray**. See also *Charles Coleridge Pöde*.
- Lapper, Edwin**. See *Chichester Alexander Bell*.
- Lapraik, William**. See *William James Russell*.
- Laptschinsky, Michel**, behaviour of red blood corpuscles to certain colouring agents and to tannic acid, 1875, 1275.
- chemistry of the crystalline lens, 1877, i., 222.
- Larocque, Léandre**, and *Anne Larocque*, recovery of tin from scraps of tinned iron, 1877, ii., 239.



- Larsen, Gerh.**, separation of copper and zinc by precipitation with sulphuretted hydrogen, 1881, A., 467.
- Lasaulx, Arnold Constantin Peter Franz von**, contributions to micromineralogy, 1873, 257.
- staurolite, 1873, 854.
  - ardenite, a new mineral containing vanadium, 1873, 854; 1874, 879.
  - crystalline forms of sodio-iridescent and sodio-rhodic chlorides, 1875, 618.
  - sieburgite, a new fossil resin, 1875, 615.
  - new mode of occurrence of alunite, 1875, 618.
  - mineralogical-crystallographical notes, 1876, ii., 487; 1877, i., 53; 1881, A., 236; 1882, A., 284.
  - breislakite, 1879, A., 206.
  - crystal system of tridymite, 1879, A., 358, 605.
  - saccharite, 1879, A., 360.
  - an intergrowth of two micas from Middletown, Connecticut, 1879, A., 363.
  - iodobromite, a new silver haloid, 1879, A., 365.
  - the eruptive rocks in the Saar and Moselle districts, 1880, A., 537.
  - desinine (*stilbite*), 1880, A., 856.
  - titanomorphite, a new calcium titanate, 1881, A., 371.
  - idocrase from Gleinitz, and the Johnsberg, near Jordansmühl, 1881, A., 381.
- Lasaulx, Arnold Constantin Peter Franz von**. See also *Johann Gottfried Galle*.
- Laskowsky**. See *Liaskowski*.
- Lasne and Benker**, loss of oxides of nitrogen in the manufacture of sulphuric acid and a means of preventing it, 1881, A., 475.
- Lasne, H.**, a new form of aspirator, 1873, 837.
- Laspeyres, Ernst Adolph Hugo**, chemical composition of maxite, 1873, 41; 1876, ii., 491.
- occurrence of aluminite near Halle, 1873, 853.
  - on maxite and leadhillite, 1873, 1112.
  - hygrophilite, a new mineral of the pinite group, 1873, 1207.
  - note on artificial crystals of antimony, 1874, 1063.
  - estimation of water, 1875, 663.
  - on the lithia psilomelane, and on the chemical constitution of the psilomelanes, 1876, i., 684.
  - crystallographic remarks on gypsum, 1876, ii., 53.
- Laspeyres, Ernst Adolph Hugo**, chemical constitution of manganese compounds, 1876, ii., 175.
- constitution of the aluminous ores of manganese, 1876, ii., 175.
  - nickel ores, 1877, i., 581.
  - chemical constitution of leadhillite, 1877, ii., 413.
  - the crystal form of the strontianite of Hamm, Westphalia, 1877, ii., 857.
  - polydymite, a new mineral, 1877, ii., 858.
  - saynite, not a distinct mineral but a mineral mixture, 1877, ii., 858.
  - an aragonite crystal from Oberstein on the Nahe, 1878, A., 207.
  - a polysynthetical angite from Bell, near Laach, 1878, A., 208.
  - penetration twins of orthoclase from Cornwall, 1878, A., 277.
  - crystals of analcime from the Kerguelen Islands, 1878, A., 278.
  - crystallographical and optical examination of glauberite, 1878, A., 382.
  - imperviousness of the adjusting materials of air-pumps to aqueous vapour, 1878, A., 469.
  - adamine crystals from Laurium, 1878, A., 943.
  - mineralogical observations, 1881, A., 543.
- Lassar, Oscar**, the alkalinity of the blood, 1874, 811.
- Lassar-Cohn**, phthalylhydroxylamine; conversion of phthalic acid into salicylic acid, 1881, A., 555.
- Latour, E.**, glycerosuccinate of lime and its use in the preparation of chalk liniment, 1874, 723.
- analysis of *Lichen esculentus* (manna), 1881, A., 931.
- Latour, E.**, and **Paul Cazeneuve**, astringent principle of mahogany, 1876, i., 86.
- Latour, E.**, and **Louis Magnier de la Source**, quercetagein, 1878, A., 80.
- Latschinoff, Paul A.**, diphenyl, 1873, 749.
- oxidation of cholesterin by potassium permanganate, 1877, ii., 781.
  - products of oxidation of cholic acid from ox bile and of the acids derived from cholesterin, 1878, A., 590.
  - some neutral oxidation products of cholesterin, 1879, A., 135.
  - oxidation products of cholic acid, 1879, A., 810; 1880, A., 56, 562.
  - cholecamphoric acid and its relation to cholanilic acid, 1880, A., 722.
  - on cholic acid containing solid fatty acids, 1881, A., 158.



- Latschinoff, Paul A.**, isocholanic acid, 1882, A., 873.
- Latschinoff, Paul A.** See also *Nicolai N. Sokoloff*.
- Laube, Gustav Carl**, a pseudomorph of dolomite after garnet, 1873, 857.
- arseniferous uranium mica (*zeunerite*) from Joachimsthal, 1873, 1010.
- Laubenheimer, August**, constitution of sodium ethylate, 1873, 44.
- action of potassium permanganate on milk sugar, 1873, 46.
- ethyl fumarate, 1873, 56.
- occurrence of benzyl alcohol in liquid storax, 1873, 65.
- behaviour of nitrobenzene with chlorine, 1875, 452.
- a reaction of phenanthrenequinone, 1875, 637.
- action of an alcoholic solution of potassium hydrate on dichloronitrobenzene, 1875, 759.
- on *m*-chloronitrobenzene and some chlorinated azo-compounds, 1876, i., 577.
- nitro-*m*-chloronitrobenzene and some of its derivatives, 1876, ii., 294.
- *o*-dinitro-compounds, 1877, i., 594; 1878, A., 975; 1882, A., 953.
- nitro-compounds, 1878, A., 405.
- Laubenheimer, August**, and **Rob. Göring**, hydrocyanocarbodiphenylimide, 1881, A., 163.
- Laubenheimer, August**, and **Georg Körner**, chloronitraniline, 1875, 648.
- Laubenheimer, August**. See also *Carl Wilhelm Will*.
- Lauber, Eduard**, production of aniline-grey on cotton fabrics in printing, 1874, 932.
- to stain wood black, 1875, 1064.
- Lauber, Eduard**. See also *Carl Hell*.
- Lanche, W.**, manures for cabbages and fruit-trees, 1880, A., 506.
- Lauche, W.**, and **Albert Orth**, garden manuring experiments, 1881, A., 936.
- Lauenstein**, depreciation of barley by overgrowth, 1880, A., 179.
- Laufer, Ernst**, on epichlorhydrin, 1877, i., 291.
- method of separating quartz from mixtures with silicates, 1878, A., 336.
- behaviour of quartz with microcosmic salt, 1879, A., 79.
- Laugier, E.**, analysis of raw sugars, 1879, A., 404.
- determination of free acids in oils, 1879, A., 406.
- Laujorais, P. J.**, experiments relating to putrefaction, disinfection, and the preservation of organic substances, 1873, 763.
- Laur, P.**, methods of extracting silver in Mexico, 1873, 416.
- electric current produced by light, 1882, A., 352.
- reduction of silver minerals by hydrogen in the wet way, 1882, A., 1246.
- Laurent, Léon**, means of rendering the sodium flame absolutely monochromatic, 1874, 528.
- Lauterbach, Paul**, a new process for the formation of nitroethane, 1878, A., 844.
- nitration of derivatives of the paraffins, 1879, A., 700.
- dinitronaphtholsulphonic acids, 1882, A., 63.
- Lauth, Charles**, action of hydrochloric acid gas on the compound ammonias, 1879, 910.
- dyeing wool with aniline-green, 1873, 959.
- aniline-black, 1873, 1069.
- a new class of colouring matters, 1876, ii., 520.
- Paris sewage, 1877, ii., 524.
- products of the distillation of beet molasses waste, 1882, A., 1256.
- Laval, C. G. de**, tungsten and its chlorides, 1874, 339.
- La Valle, Giuseppe**, crystallographic constants of some benzene derivatives, 1880, A., 384.
- Lavender, Robert, Josiah Richards**, and **David Williams**, improvements in treating waste sulphuric acid that has been used for pickling iron plates, and other articles of iron or steel, 1879, A., 423.
- Lawes, (Sir) John Bennet**, influence of size on the composition of mangels, 1875, 1047.
- relation between the decomposition and formation of carbonic anhydride, 1882, A., 548.
- Lawes, (Sir) John Bennet**, and **(Sir) Joseph Henry Gilbert**, report of twenty years experiments on barley, 1874, 179.
- Lawes, (Sir) John Bennet**, **(Sir) Joseph Henry Gilbert**, and **Robert Warington**, rain and drainage waters collected at Rothamsted, 1882, A., 889.
- Lawes, (Sir) John Bennet**. See also **(Sir) Joseph Henry Gilbert**.
- Lawrance, Henry Aubrey**. See **Edward Frankland**.
- Lawrence, Reginald**, and **C. W. Reilly**, analysis of Burton ales and Dublin porter, 1879, A., 344.

- Lawrinowitsch, G.**, formation of pinacone, 1876, i., 897.  
 — on an 8-carbon pinacolin, 1877, ii., 306.  
 — pinacone and pinacolin from methyl ethyl ketone, 1877, ii., 427.
- Lea, Mathew Carey**, the influence of colour on reduction by light, 1874, 944.  
 — a combination of silver chloride with mercuric iodide, 1874, 963.  
 — laboratory notes, 1874, 964.  
 — action of light on silver bromide, 1874, 1044.  
 — action of the less refrangible rays of light on silver iodide and bromide, 1876, i., 28.  
 — detection of hydrocyanic acid, 1876, i., 112.  
 — sensitiveness of silver bromide to the green rays, as modified by other substances, 1877, i., 266.  
 — sensitiveness to light of various silver salts, 1877, ii., 690.  
 — theory of the action of certain organic substances in increasing the sensitiveness of silver haloids, 1878, A., 191.  
 — some reactions of silver chloride and bromide, 1878, A., 650.  
 — ammonio-argentic iodide, 1878, A., 936.
- Lebaigue, Eugène**, apparatus for continual dialysis, 1879, A., 347.
- Lebedeff, A.**, polymerisation of amylene, 1876, i., 894.  
 — on synthetical pyrotartaric acid, 1876, ii., 287.
- Le Bel, Joseph Achille**, preparation of active amyl alcohol, 1874, 139.  
 — relations between the formulæ of organic bodies and the rotatory power of their solutions, 1875, 874.  
 — a reaction of the homologues of ethene which may explain their absence from natural petroleum, 1876, i., 539.  
 — critical observations on the new *d*-amyl alcohol of Beignes Bakhoven, 1876, ii., 64.  
 — absence of rotatory power in iodide of triethylmethylstibine, 1877, ii., 734.  
 — action of hydrochloric acid on the olefines, 1878, A., 19.  
 — dextrogyrate amyl alcohol, 1879, A., 369.  
 — limit of the separation of alcohol from water by distillation, 1879, A., 703.  
 — methylpropylcarbinol prepared by synthesis, 1879, A., 1029.
- Le Bel, Joseph Achille**, active propyl glycol, 1881, A., 1021.
- Le Bel, Joseph Achille**, and **William H. Greene**, new method of preparing *n*-dimethylethylene, 1878, A., 773.  
 — action of zinc chloride on methyl alcohol: hexamethylbenzene, 1879, A., 49.  
 — action of zinc chloride on *n*-butyl alcohol, 1879, A., 1029.
- Le Bel, Joseph Achille**. See also **Arthur Henninger**.
- Lebl, M.**, internal growth of potatoes, 1882, A., 641.
- Le Blanc, Félix**, ozone and peroxide of hydrogen, 1873, 242.
- Le Blanc, Félix**. See also **E. Allard**.
- Le Bon, Gustave**, conversion of blood into a soluble powder, 1876, i., 280.  
 — physiological activity of borax, 1880, A., 415.  
 — calcium and sodium glyceroborates, 1882, A., 1244.
- Lecco, Marco T.**, a colouring matter analogous to Magdala-red, 1875, 169.  
 — methazonic acid, 1876, ii., 287.
- Lecco, Marco, T.** See also **Victor Meyer**.
- Lechartier, G.**, artificial formation of pyroxene and peridot, 1873, 40.  
 — estimation of organic matter in natural waters, 1879, A., 976.  
 — action of potassium pyrogallol on nitric oxide, 1879, A., 1012.  
 — preservation of green fodder in pits, 1879, A., 1049.  
 — presence of phosphorus in the rocks of Brittany, 1881, A., 700.  
 — composition of buckwheat, 1881, A., 1164; 1882, A., 642.  
 — modification of green fodder preserved in pits, 1882, A., 329.
- Lechartier, G.**, and **Félix Bellamy**, fermentation of fruits, 1873, 293; 1876, i., 738.  
 — presence of zinc in the bodies of animals and plants, 1877, ii., 504.  
 — action of antiseptic and toxic vapours on the fermentation of fruits, 1877, ii., 507.
- Lechartier, G.** See also **Emile Duclaux**.
- Le Chatelier, Henry Louis**, dialysis of sodium silico-aluminate, 1874, 871.  
 — manufacture of pig iron containing manganese and phosphorus in Belgium, and production of fine-grained iron, 1876, i., 789.  
 — Belgian iron, 1876, i., 972.  
 — an explanation of the strength of puddled iron, 1876, ii., 278.

- Le Chatelier, Henry Louis**, the salts of the Algerian marshes, 1877, ii., 176.  
 — crystalline hydrated barium silicate, 1881, A., 683.  
 — Portland cements, 1882, A., 1143.
- Le Chatelier, Henry Louis, and Léon Durand-Claye**, amount of phosphoric acid in coal ashes, 1873, 1066.
- Le Chatelier, Henry Louis.** See also *François Ernest Mallard*.
- Lecher, Ernst**, heat capacity of mixtures of methyl alcohol and water, 1879, A., 688.  
 — absorption of the sun's rays by the carbonic anhydride of the atmosphere, 1881, A., 489.  
 — so-called chemical repulsion, 1881, A., 873.
- Leclanché, Georges**, an improvement of the peroxide of manganese battery, 1876, ii., 589; 1879, A., 1.
- Leclerc, A.**, estimation of manganese in soils and vegetables, 1873, 193.  
 — germination of chevalier barley, 1875, 661.  
 — germination, 1875, 777.  
 — nutritive value of seed bearing beet-root, 1879, A., 822.
- Leclerc, A. (and others)**, valuation of fodders, 1882, A., 549.
- Leclerc, A.** See also *C. Borel, L. Forquignon, Louis Grandeau*.
- Leclère**, decorating mirrors and metallic surfaces by the aid of photography, 1882, A., 247.
- Lecoq de Boisbaudran.** See *Boisbaudran*.
- Lecouteux, Edouard**, money value of stable manure, 1881, A., 1076.  
 — value and composition of sheep dung, 1882, A., 1315.
- Ledderhose, Georg**, glycosamine hydrochloride, 1877, i., 64.
- Ledebur, C. H. A.**, gases evolved from molten iron, 1874, 659.  
 — the welding of iron, 1876, i., 131.  
 — effect of hot air on the blast furnace process, 1877, ii., 239.  
 — preparatory treatment of manganese ores for the production of ferromanganese and crude manganese in the blast furnace, 1882, A., 1144.
- Ledoux, Alfred Reid.** See *Rudolf Biedermann*.
- Lee, G. H.** See *Charles H. Stearn*.
- Leebody, John Robinson**, estimation of chicory in coffee, 1875, 288.
- Leeds, Albert R.**, aventurine orthoclase, 1873, 248.  
 — American minerals: I. hydrated unisilicate approaching pyrosclerite. —II. pseudomorph after pectolite. —III. leucagite, from Amity, New York. —IV. aluminomagnesian silicate accompanying corundum. —V. moonstone variety of albite from Delaware Co., Pennsylvania. —VI. antholite from "Star Rock," Concord, Delaware Co., Pennsylvania. —VII. wernerite from Van Arsdale's quarry, Buck's Co., Pennsylvania, 1874, 28.
- Leeds, Albert R.**, dissociation of certain compounds at very low temperatures, 1874, 947.  
 — zinc hydride: reduction of silver nitrate by hydrogen, 1877, i., 282.  
 — new method of estimating ferrous oxide in silicates which are insoluble in the ordinary mineral acids, 1877, ii., 649.  
 — colorimeter for quantitative analysis, 1878, A., 807.  
 — action of potassium permanganate on oxalic acid, 1879, A., 353.  
 — alteration of standard ammonium chloride solution when kept in the dark, 1879, A., 400.  
 — ammonium nitrite and the by-products obtained in the ozonisation of air by moist phosphorus, 1879, A., 881.  
 — detection and estimation of nitrous acid in potable waters, acids, etc., 1879, A., 964.  
 — estimation of nitrates in very dilute solutions, 1879, A., 1062.  
 — action of ozone on the colouring matter of plants, 1880, A., 58.  
 — bleaching sugar syrups by ozone, 1880, A., 74.  
 — influence of volume and temperature in the preparation of ozone; a new ozoniser, 1880, A., 90.  
 — non-production of ozone in the crystallization of iodic acid, 1880, A., 213.  
 — solubility of ozone in water, 1880, A., 213.  
 — oxidation of carbonic oxide by moist air in presence of phosphorus at the ordinary temperature, 1880, A., 237.  
 — reduction of carbonic anhydride by phosphorus at ordinary temperatures, 1880, A., 237, 298.  
 — formation of hydrogen peroxide and ozone, 1880, A., 699, 847.  
 — new methods in actinochemistry, 1880, A., 837.  
 — action of light and darkness on tannin solutions, 1880, A., 908.

- Leeds, Albert R.**, preparation of ozone by heating substances containing oxygen, 1881, A., 221.
- the invariable production, not only of ozone and hydrogen peroxide, but also of ammonium nitrate, in the ozonisation of purified air by moist phosphorus, 1881, A., 506.
- action of nitrogen peroxide on carbon compounds, 1881, A., 584.
- action of ozone, nascent oxygen, and hydrogen peroxide on benzene, 1881, A., 719.
- production of hydrogen peroxide by hydrogenised palladium; ozobenzene, 1881, A., 898.
- direct conversion of the aromatic amides into their corresponding azo-compounds, 1882, A., 47.
- action of hydrogen dioxide on aromatic compounds, 1882, A., 501.
- acrolein-carbamide, 1882, A., 1195.
- diphenylamine-acetaldehyde, 1882, A., 1197.
- Leeds, Albert R.**, and **Edgar Everhart**, analysis of mustard, 1882, A., 1007.
- Leeson, Henry Beaumont**, obituary notice of, 1873, 778.
- Leeuw, M. C. de**, composition of brandy distillery residues, 1881, A., 757.
- method of freeing maize from fat before employing it for the manufacture of spirit, 1882, A., 348.
- phosphoric acid in the urine of ruminants, 1882, A., 543.
- phosphoric acid in the urine of Graminivora, 1882, A., 636.
- composition of water in which malt had been steeped, 1882, A., 993.
- on dari, 1882, A., 1224.
- Leeuw, M. C. de**. See also **Hugo Weiske**.
- Lefberg and Georgiefski**, action of saliva on different kinds of starch, 1876, ii., 398.
- Lefort, Jules**, preparation of atropine from Belladonna leaves, 1874, 701.
- on the part played by phosphorus and phosphates in putrefaction, 1874, 813.
- green iodide of mercury, 1874, 1135.
- action of organic acids on potassium and sodium tungstates, 1876, ii., 278.
- tungstates of the earthy and metallic sesquioxides, 1879, A., 355.
- on tritungstates, 1879, A., 600.
- use of Smithson's pile for the detection of mercury in mineral waters, 1880, A., 510.
- action of arsenic and phosphoric acids on sodium tungstates, and a new method of analysing tungstates, 1881, A., 1107.
- Lefort, Jules**, action of arsenic and phosphoric acids on the sodium salts of tungstic acid, 1882, A., 702.
- beetroot wine, 1882, A., 1336.
- Lefort, Jules**, and **Paul Thibault**, influence of gum arabic on certain reactions, 1882, A., 1322.
- Lefort, Jules**, and **Frédéric Wurtz**, preparation and composition of emetine, 1877, ii., 628.
- Lefranc, Edmond**, atractylic acid, 1873, 638.
- specific identity of inulins and of natural levulins, 1881, A., 149.
- Lefranc, Edmond**. See also **Emile Cl. Jungfleisch**.
- Léger, E.**, use of tartaric acid in solutions of magnesia, 1874, 97.
- Léger, E.** See also **G. Boiraux**.
- Legler, Ludwig**, etheric or lampic acid, 1881, A., 576.
- Legrip, Louis**, and **Auguste Petit**, extraction of caffeine, 1877, ii., 500.
- Legros, Ch.** See **F. Rochard**.
- Lehmann, Arthur**, note on ultramarine, 1877, i., 167.
- constitution of ultramarine, 1879, A., 204.
- Lehmann, Johannes Georg**, ettringite, 1874, 878.
- the pyrogenic quartz in the lavas of the Lower Rhine, 1878, A., 477.
- occurrence of titanium minerals in the Saxon granulites, 1882, A., 580.
- Lehmann, Julius Alexander**, on the form of nitrogen most suitable for the nutrition of plants, 1876, i., 733.
- the composition of palm nut cakes, 1876, ii., 323.
- the estimation of casein and fat in milk, 1878, A., 95.
- influence of food on the formation of bone, 1878, A., 992.
- milk analysis, 1878, A., 1014.
- Lehmann, Julius Alexander**. See also **Ernst Wein**.
- Lehne, Adolf**, condensation of benzhydrol and naphthalene, 1880, A., 478.
- *p*-ditolyl-nitrosamine, 1881, A., 41.
- *p*-ditolylhydrazine, 1881, A., 41.
- Lehrfeld, Theodor**, action of ammonia on dibromosuccinic acid and on ethyl dibromosuccinate, 1882, A., 163.
- Leibius, Adolph**, separation of gold from silver, 1873, 728.
- Leidié, Emile Jules**, solubility of the different modifications of tartaric acid in water, 1882, A., 1191.



- Leipold, Josef**, on photogalvanography, 1876, i., 118.
- Leist, A.** See *Carl Engler*.
- Léizour, H.**, and **Nivet**, on fodder cabbages, 1882, A., 423.
- Le Lavandier, C.** See *Henri Pellet*.
- Lellmann, Eugen**, a new method of preparing methenyldiphenylamine, 1882, A., 503.
- diphenylamine and *p*-ditolylamine, 1882, A., 1059.
- a new class of amidines, 1882, A., 1061.
- Lellmann, Eugen.** See also *Hans Hübner*.
- Lemberg, Johann**, decomposition of silicates, 1880, A., 503.
- Lemétayer.** See *Joaquim Isidore Pierre*.
- Lemoine, Georges**, manufacture of magnesia, 1874, 727.
- treatment of the residue left on roasting iron pyrites, 1874, 727.
- chemical equilibrium between hydrogen and gaseous iodine, 1875, 608; 1876, i., 38; 1878, A., 265.
- dissociation of gaseous hydriodic acid in presence of an excess of one of its elements, 1877, ii., 828.
- dissociation: comparison of formulæ deduced from experiment, 1881, A., 1095.
- sulphur salts derived from phosphorus sesquisulphide, 1882, A., 9.
- chemical action of light, 1882, A., 129.
- Lencauchez, A.**, condensation of zinc vapours in the blast furnace, 1878, A., 759.
- Lenz, Wilhelm**, some bromobenzene-sulphonic acids, 1876, ii., 198.
- iodobenzenesulphonic acid, 1877, ii., 770.
- fluorobenzenesulphonic acid and the melting points of substituted benzenesulphonic acids, 1879, A., 649.
- estimation of glycerol, 1880, A., 757.
- reactions of aloes, 1882, A., 1239.
- Leo, Hans**, substituted thiamides, 1878, A., 409.
- elimination of gaseous nitrogen by animals, 1882, A., 636.
- Leone, Teodoro**, action of sulphuric chlorhydrin on nitrocymentene, 1882, A., 722.
- synthetic amyl-naphthalene, 1882, A., 1210.
- Leonhardi**, adulteration of ethereal oils, 1878, A., 811.
- Lepage, J.**, estimation of potassium bromide in potassium iodide, 1873, 528.
- Lepage, J.**, method of testing for impurities in potassium iodide, 1877, i., 344.
- Lepel, Franz von**, spectroscopic reactions of magnesium, 1877, i., 676.
- adulteration of wine, 1878, A., 168; 1879, A., 82; 1880, A., 191.
- absorption spectra of certain colouring matters in various solvents, 1878, A., 925.
- new universal stand for use with the pocket spectroscope, 1879, A., 574.
- behaviour of fruit juices of different ages with reagents, 1880, A., 354.
- alkanet-red as a reagent for magnesium salts, 1881, A., 62.
- vegetable colouring matters as reagents for magnesium salts, 1881, A., 63.
- Lépine, Raphael**, incompletely oxidised sulphur in urine, 1882, A., 560.
- Lépine, Raphael**, and **Flavard**, incompletely oxidised sulphur in urine, 1881, A., 298.
- Le Play, Albert**, a system of irrigating meadows by means of rain water where the soil is either mountainous or impermeable, 1876, i., 730.
- Leppert, Wladislaus**, oxidation of dibenzyl and its derivatives, 1876, i., 704.
- Leppert, Wladislaus.** See also *Marcellus Nencki, P. von Rakowski*.
- Lermontoff, (Mlle.) Julie**, methene sulphocyanate, 1875, 144.
- action of methene iodide on amines, 1875, 145.
- preparation of trimethylene bromide, 1877, i., 59.
- action of tertiary butyl iodide on isobutylene in presence of calcium oxide, 1878, A., 963.
- Le Roux, François Pierre**, electromotive force of the electric arc, 1881, A., 958.
- Lescœur, Henri**, on some acid salts, 1874, 870.
- reciprocal displacement of volatile fatty acids, 1875, 555.
- mutual displacement of acetic and formic acids, 1875, 1175.
- the gyratory movement of certain salts on the surface of water, 1876, i., 876.
- purification of valeric acid, 1877, i., 589.
- acid acetates, 1877, ii., 428.
- action of chlorine on ethyl bromide, 1878, A., 718.
- hydrates of calcium chloride, 1881, A., 878.



- Lescœur, Henri**, and **E. Morelle**, identity of inulin from different sources, 1878, A., 970.
- Lescœur, Henri**, and **A. Rigaut**, solid cyanogen hydride, 1879, A., 1028.
- Less, Emil**, conductivity for heat of rocks and woods, 1878, A., 693.
- application of the telephone to the estimation of resistances in galvanic circuits and batteries, 1882, A., 789.
- Letellier, A.**, oxidation of alcohol by an ammoniacal solution of cupric oxide, 1880, A., 310.
- Letheby, Henry**, obituary notice of, 1876, i., 618.
- Letny, Alexandre**, action of iodine on sulphocarbamide (*sulphurca*), 1876, i., 911.
- decomposition of petroleum by heat, 1878, A., 961.
- Lettenmayer, Theodor**, and **Carl Theodor Liebermann**, peculiar occurrence of humic acid, 1874, 704.
- Letts, Edmund Albert**, some bismuth residues, 1879, A., 355.
- phthalein of hæmatoxylin, 1880, A., 54.
- action of sodium on turpentine hydrochloride, 1880, A., 669.
- phosphorus betaines, 1881, A., 717; 1882, A., 718.
- Letts, Edmund Albert**, and **John Norman Collie**, tetrabenzylphosphonium salts, 1881, A., 722; 1882, A., 724.
- Letts, Edmund Albert**. See also **Alexander Crum Brown**.
- Lettsom, William G.**, rhabdophane, a new mineral, 1878, A., 652.
- Leube, Wilhelm Olivier von**, new meat extract, 1874, 724.
- employment of compressed air in filtering solutions, 1877, i., 270.
- Leuchs, Georg**, gold monochloride, 1873, 245.
- accidental formation of calcium rosolate, 1873, 275.
- detection of water in essential oils, 1873, 296.
- Leuckart, Rudolf**, ethylcarbamide and some of its derivatives, 1880, A., 383.
- behaviour of the isomeric monobromocinnamic acids with concentrated sulphuric acid, 1882, A., 615.
- Leuken, Carl**, action of potassium permanganate on benzoic acid, etc., 1882, A., 1328.
- Leuze**, calespar in basalt tufa from Owen Bolle, 1881, A., 998.
- Levallois, Albert**, a sugar present in the grain of *Soja hispida*, 1880, A., 796; 1881, A., 1121.
- Levallois, Albert**, and **Etienne Stanislas Meunier**, crystallised calcium oxide, 1880, A., 700.
- Levesic, Oscar Leopold**, composition of coffees, 1877, i., 752.
- Levi, Alberto**, influence of light on the ripening of grapes, 1881, A., 930; 1882, A., 119.
- Lévy, Albert**, ammonia in air and water, 1877, ii., 509; 1878, A., 243; 1880, A., 848.
- estimation of atmospheric ozone, 1877, ii., 916; 1878, A., 703.
- Lévy, L.**, sketch of the origin of the mineral waters of Savoy, 1880, A., 453.
- Levy, Michel**. See **Michel-Levy**.
- Levy, Siegmund**, and **Gustav Theodor August Otto Schultz**, chlorinated quinones, 1880, A., 888.
- chlorine and bromine derivatives of quinone, 1882, A., 509.
- Lewes, Vivian Byam**, on pentathionic acid, 1881, T., 68.
- experiments on the action of potassium amalgam, sulphuretted hydrogen, and potassic hydrate respectively, on tetra- and penta-thionate of potassium, 1882, T., 300.
- Lewin, Louis**, spongy iron and animal charcoal as materials for purifying water, 1879, A., 343.
- influence of glycerol on proteid tissue change, 1880, A., 817.
- Lewis, David Swanson**. See **Francis Humphreys Storer**.
- Lewis, Henry Carrill**, philadelphite, a new mineral species, 1882, A., 152.
- Lewis, William J.**, crystallographic properties of mairogallol, 1875, 711.
- note on the crystallography of leucarin, 1875, 1147.
- glaucodote, 1877, ii., 855.
- Lewkowitsch, Julius**, preparation of nitro-fatty acids, 1880, A., 33.
- preparation of *d*-mandelic acid from the optically inactive acid, 1882, A., 1076.
- Lewy, Leo**. See **Ferdinand Tiemann**.
- Lextreit, Marius Auguste**, compound of strychnine with iodoform, 1881, A., 748.
- Ley, Nicolai**, optical properties of some compounds of the pentane series, 1874, 350.
- oxidation of oxy-acids, 1877, ii., 309.
- Ley, Nicolai**, and **Alexander Popoff**, oxidation of the oxy-acids of the fatty series, 1874, 1082.

- Leyder, J.**, and **J. Pyro**, on the composition of the flesh of oxen and horses: its food value and its money value, 1876, i., 408.
- Leymann, Hermann**, derivatives of *a*-dinitrochlorobenzene, 1882, A., 1057.
- L'Hôte, Louis Désiré**, production of ammonia sulphate from nitrogenous waste, 1873, 1066.
- remarks on the observations of Mène on the preparation of ammonia sulphate from nitrogenous waste, 1873, 1066.
- process for enriching phosphates containing earthy carbonates, 1879, A., 490.
- phosphorite from the south of France, 1881, A., 766.
- L'Hôte, Louis Désiré**. See also *Georges Bergeron*.
- Liaskowski, N.**, chemical processes in the germination of gourd seeds, 1875, 180.
- Liaskowski, N.** See also *A. Sabanin*.
- Lichtenstein, Ludolf**, dry distillation of the mucates of aromatic amines, 1881, A., 721; 1882, A., 178.
- Lichtenstein, Maurice**, obituary notice of, 1877, i., 506.
- Liddle, William Train**. See *Watson Smith*.
- Lidoff, Alexander P.**, solubility of aluminium gallate in water, 1882, A., 849.
- Lidoff, Alexander P.**, and *Wladimir A. Tichomirow*, formation of hypochlorites and chlorates from chlorides by the action of the electric current, 1882, A., 925.
- Liebelt**. See *Ernst Albert Schmidt*.
- Lieben, Adolf**, behaviour of ether in contact with various substances, 1873, 263.
- the caproic acid contained in crude fermentation butyric acid, 1874, 248.
- ethidene cyclohexide, 1876, i., 58.
- synthesis of alcohols by means of chlorinated ethers, 1876, i., 59.
- solid benzoyl chloride, 1876, i., 80.
- density of chlorine at high temperatures, 1879, A., 1011.
- analyses of four waters for Turin, 1880, A., 591.
- compound of calcium chloride with the fatty acids, 1881, A., 712.
- Lieben, Adolf**, and *Gustav Janeček*, *n*-caproic acid, *n*-hexyl alcohol, and *n*-onanthylic acid, 1877, ii., 879.
- Lieben, Adolf**, and *Emmanuel Paternò*, the dry distillation of calcium formate, 1874, 357.
- Lieben, Adolf**, and *Antonio Rossi*, caproic acid, normal and ordinary, 1873, 267.
- *n*-butyl compounds and valerianic ether, 1873, 367.
- Lieben, Adolf**, and *Simon Zeisel*, crotonaldehyde and its homologues, 1879, A., 615.
- synthesis of glycerol, 1881, A., 145.
- condensation products of aldehydes and their derivatives, 1881, A., 710.
- reduction of crotonyl chloral, 1881, A., 711.
- Liebenberg, Adolf (Ritter) von**, fertilization of cereals, 1881, A., 633.
- investigations on warmth in soils, 1881, A., 1071.
- Lieber, Karl**, the manufacture of soda, 1875, 671.
- Liebermann, Carl Theodor**, cærulignone and its derivatives, 1873, 70, 1033; 1874, 76.
- monoxyanthraquinone and anthraflavic acid, 1873, 275.
- decomposition of rosaniline by water, 1873, 1241.
- action of nitrous acid upon phenols, 1874, 693.
- on the colours obtained from phenols by the action of nitrous-sulphuric acid (a correction), 1874, 1096.
- synthesis of anthraquinonedisulphonic acid, 1874, 1097.
- on the dyes produced by the action of nitrous acid on the aromatic oxy-compounds, 1875, 167.
- xylidine, 1875, 170.
- trimethylhexoxydiphenyl, 1875, 761.
- nitronaphthols, 1875, 1023.
- emodin, 1876, i., 251.
- orcein, 1876, i., 704.
- pitalcal, 1876 ii., 101.
- constitution of oxythymoquinone, 1877, i., 463; ii., 476, 891.
- researches on the naphthalene group, 1877, i., 597.
- studies in the anthraquinone group, 1877, i., 609.
- formula of quinhydrone, 1878, A., 63, 145.
- polythymoquinone, 1878, A., 418.
- the colouring matter of birds' egg shells, 1878, A., 590.
- remarks on violacein and cupitton, 1878, A., 799.
- dioxybenzophenone from rosaniline, 1878, A., 887.

- Liebermann, Carl Theodor**, synthesis of anthranilin and chrysazin from anthracene, 1879, A., 260.
- reduction of anthraquinonesulphonic acids, 1879, A., 537.
- anthracene derivatives of the chrysazin series, 1879, A., 537.
- fluorescence in the anthracene series, 1880, A., 665.
- constitution of the thiourethanes, 1881, A., 44.
- derivatives of anthraquinone, 1881, A., 100.
- alkyloxanthranols, 1881, A., 608.
- conversion of  $\beta$ -naphthaquinone-anilide into  $\alpha$ -naphthaquinoneanilide, 1881, A., 1011.
- preparation of  $\alpha$ -naphthaquinone, 1882, A., 203.
- constitution of the thiohydantoin and thiocarbamates, 1882, A., 296.
- reduction in the anthraquinone series, 1882, A., 855.
- azoanthrol colours, 1882, A., 976.
- Liebermann, Carl Theodor**, and **A. Bischof**, the third anthracenecarboxylic acid, 1880, A., 399.
- Liebermann, Carl Theodor**, and **Kurt Boeck**, anthracenedisulphonic acid and its conversion into anthranilin, 1879, A., 257.
- Liebermann, Carl Theodor**, and **August Bollert**, anthraniline, 1882, A., 1105.
- Liebermann, Carl Theodor**, and **Otto Burg**, brazilin, 1877, ii., 193.
- decomposition of the brown-coal tar oils at a red heat, 1878, A., 861.
- Liebermann, Carl Theodor**, and **Jul. Dehnst**, constitution of anthranilin and oxyanthranilin, 1879, A., 942.
- decomposition of hydroxy-anthraquinone by potash, 1880, A., 49.
- Liebermann, Carl Theodor**, and **August Dittler**, pentabromoresorcin, 1873, 502.
- the isomeric  $\alpha$ - and  $\beta$ -derivatives of naphthalene, 1873, 1232.
- pentabromoresorcin and pentabromorsin, 1874, 62.
- isomeric nitracetonaphthalides, 1874, 692.
- Liebermann, Carl Theodor**, and **Otto Fischer**, conversion of anthraquinones into one another, 1876, i., 248.
- chrysophanic acid, 1876, i., 399.
- Liebermann, Carl Theodor**, and **Fritz Giesel**, chrysamic acid and chrysazin, 1876, i., 711; ii., 90.
- reduction products of quini-zarin, 1877, ii., 494.
- Liebermann, Carl Theodor**, and **Anton Goldschmidt**, ethylenimid-argentic nitrate, 1878, A., 286.
- Liebermann, Carl Theodor**, and **A. Hagen**, naphthol and anthrol ethers, 1882, A., 1212.
- Liebermann, Carl Theodor**, and **Siegfried Hamburger**, formulae of quercetin and quercetin, 1879, A., 944.
- Liebermann, Carl Theodor**, and **W. Hammerschlag**, dinitronaphthalene, 1876, ii., 80.
- Liebermann, Carl Theodor**, and **Otto Hoermann**, glucoside of buckthorn berries and rhamnodulcite, 1879, A., 39.
- formulae of rhamnetin and xanthorhamnin, 1879, A., 271.
- anthrol, 1879, A., 653.
- Liebermann, Carl Theodor**, and **Ignaz Homeyer**, peculiar formation of tolane tetrachloride, 1880, A., 259.
- Liebermann, Carl Theodor**, and **Paul Jacobson**, formation and constitution of  $\beta$ -naphthaquinone and some of its derivatives, 1882, A., 521.
- Liebermann, Carl Theodor**, and **Rudolf Knietzsch**, composition of aesculin and aesculetin, 1881, A., 107.
- Liebermann, Carl Theodor**, and **Ludwig Landshoff**, compound of ether with phosphorus pentachloride, 1881, A., 33.
- action of nitric acid on anthracene dihydride and ethyl-anthracene dihydride, 1881, A., 606.
- derivatives of ethyl-, amyl-, and methyl-oxanthranols, 1881, A., 608.
- Liebermann, Carl Theodor**, and **August Lange**, formulae of thiohydantoin, 1880, A., 44.
- lead plumbothioglycollate, 1881, A., 800.
- Liebermann, Carl Theodor**, and **Ludwig Lindemann**, combinations of anthracene with the oxides of nitrogen, 1881, A., 99.
- Liebermann, Carl Theodor**, and **Hugo Mastbaum**, aesculetin, 1881, A., 610.
- Liebermann, Carl Theodor**, and **Stanislaw Natanson**, *p*- and *o*-tolylthiourethanes, 1881, A., 45.
- Liebermann, Carl Theodor**, and **H. Plath**,  $\psi$ -purpurin, 1878, A., 77.
- Liebermann, Carl Theodor**, and **Gerhard von Rath**, anthracenecarbonic acid, 1875, 763.
- Liebermann, Carl Theodor**, and **Fritz Scheiding**,  $\beta$ -naphthylamine, 1876, i., 403.

- Liebermann, Carl Theodor**, and **H. Schwarzer**, rosolic acid, 1876, ii., 414.
- Liebermann, Carl Theodor**, and **Paul Seidler**, chrysarobin in "Goa powder," 1879, A., 326.
- Liebermann, Carl Theodor**, and **Sigismund Edward Simon**, hydroxy-anthranol, 1881, A., 823.
- Liebermann, Carl Theodor**, and **Tauchert**, catechin, 1881, A., 52.
- Liebermann, Carl Theodor**, and **Georg Tobias**, synthesis of homologues of anthracene, 1881, A., 736.
- Liebermann, Carl Theodor**, and **G. Topf**, anthranol, 1877, i., 86.
- Liebermann, Carl Theodor**, and **H. Troschke**, action of ammonia on alizarin, 1875, 890.
- Liebermann, Carl Theodor**, and **Max Völtzkow**, phenylthiocarbimideglycollide, 1880, A., 659.
- Liebermann, Carl Theodor**, and **Hans Jakob Walder**, butyloxanthranol, 1881, A., 609.
- Liebermann, Carl Theodor**, and **Martin Edward Waldstein**, emodin from the bark of *Rhamnus Frangula*, 1877, i., 477.
- Liebermann, Carl Theodor**. See also **Theodor Lettenmayer**.
- Liebermann, Leo**, choleticin and hydrobilirubin, 1876, i., 407.
- examination for alkaloids in cases of poisoning, 1876, i., 966.
- on the amount of nitrogen and albumin in milk, and on the estimation of nitrogen in albuminoids, 1876, ii., 216.
- researches on chlorophyll, 1877, ii., 208.
- solution of sulphur in acetic acid, 1877, ii., 276.
- *m*-nitro- and *m*-amido-benzacetic acids, 1877, ii., 617.
- nitrobenzoic acids, 1877, ii., 782.
- detection of magenta in wine, 1877, ii., 939.
- action of animal charcoal on salts, 1878, A., 109.
- remarks on Kosmann's "Research on glycerin, cellulose, and gum: transformation of glycerin into glucose," 1878, A., 287.
- gas evolved by the action of barium hydrate on albuminoids, 1879, A., 735.
- apparatus for the determination of the melting points of easily fusible metals and alloys, 1882, A., 914.
- dry distillation of tartaric acid, 1882, A., 948.
- Liebermann, Leo**, sulphurous acid in wine, 1882, A., 994.
- detection of sulphurous acid in wine and other liquids, 1882, A., 994.
- flashing point of petroleum, 1882, A., 1326.
- Liebert, A.**, burnt-in photographs, 1875, 1303.
- Liebig, Georg von**, absorption of oxygen in the lungs under ordinary and increased atmospheric pressure, 1875, 1273.
- Liebig, Hermann von**, solubility of phosphates in soil by acids contained in the roots of plants, 1882, A., 334.
- Liebig, Justus (Freiherr) von**, obituary notice of, 1874, 1204.
- Liebig, Max**, on the determination of oxygen in the gases from the lead chambers, and on some new apparatus used in gas analysis, 1873, 935.
- introduction of nitric acid into the sulphuric acid chambers along with the steam, 1880, A., 196.
- Liebisch, Theodor**, occurrence of disthene in Central Africa, 1879, A., 24.
- mineralogical-petrographical notes on the granite porphyry of Lower Silesia, 1879, A., 29.
- some syenite-porphyrics of South-West Norway, 1879, A., 362.
- analytical geometric treatment of crystallography, 1881, A., 398.
- Liebmann, Adolf**, synthesis of cumene, 1880, A., 384.
- synthesis of phenols, 1882, A., 171, 727.
- Liebmann, Adolf**. See also **Otto Wallach**.
- Liebscher, G.**, exhaustion of the soil by beet-root cultivation, 1879, A., 1050.
- use of the ferment *Eurotium oryzae* in Japan, 1882, A., 247.
- Liebschütz, P.**. See **Henri Pellet**.
- Liechti, L. Paul**, and **Bernhard Kempe**, chlorides of molybdenum, 1874, 26, 132.
- Lielegg, Andreas**, preparation of chrome alum, 1873, 848.
- Liepmann, Harry**. See **Rudolph Fittig**.
- Liesegang, Ed. (senior)**, cement for glass and porcelain, 1873, 97.
- Liesegang, Paul E.**, reproduction and inversion of negatives, 1873, 1070.
- Lietzenmayer, Otto**, preparation of glycol, 1876, ii., 64; 1877, i., 293.
- absorption of hydrogen by copper spirals, 1878, A., 377.
- Lieventhal, E.**, estimation of caffeine in tea leaves, 1873, 411.



- Lill, Max von**, and **H. Sturm**, iron analysis, 1877, ii., 224.
- Liman, C.**, conversion of carboxyl-haemoglobin into oxyhaemoglobin, 1877, ii., 346.
- Limousin, S.**, explosion in preparing oxygen, 1881, A., 1097.
- Limpach, Leonhard**, oxidation products of stearolic acid, 1878, A., 403.
- Limpach, Leonhard**. See also **Max Conrad, Johannes Wislicenus**.
- Limpricht, Heinrich**, mucic acid and pyromucic acid, 1873, 621.
- phenanthrene, 1873, 897.
- on a compound  $C_{11}H_8S_2$ , 1873, 1032.
- benzylsulphonic chloride, 1873, 1040.
- *o*-toluidinesulphonic acid, 1874, 73; 1875, 368.
- nitro-diazo-compounds, 1874, 805.
- *m*-toluidine, 1874, 901.
- *o*-amidotoluene-*p*-sulphonic acid, 1874, 904; 1875, 268.
- *p*-toluidinesulphonic acids, 1874, 991.
- *o*- and *p*-bromotoluenesulphonic acids and their derivatives, 1875, 264.
- amidosulphonic acids, 1875, 267.
- determination of the solubility of salts, 1875, 730.
- dinitrobenzenedisulphonic acid, 1875, 765.
- three isomeric bromobenzenesulphonic acids, 1875, 896, 1027, 1195.
- amidobenzenesulphonic acid and its derivatives, 1875, 1028; 1876, i., 81, 931.
- dibrom-*o*-amidobenzenesulphonic acid, 1876, i., 586.
- benzenesulphonic acid and its derivatives, 1876, ii., 201, 301; 1877, i., 595.
- action of bromine on *o*-amidobenzenesulphonic acid, 1876, ii., 307.
- on the replacement of bromine and sulphonyl by hydrogen in the benzenesulphonic acids; and on the *o*-benzenesulphonic acids, 1877, ii., 191.
- action of bromine on silver benzenesulphonate and *m*-bromobenzenesulphonate, 1877, ii., 459.
- decomposition of substituted benzenesulphonic acids by water and by acids at high temperatures, 1878, A., 220.
- structure of the diazo-compounds of benzenesulphonic acids, 1878, A., 222.
- Limpricht, Heinrich**, reduction of nitro-compounds by stannous chloride: estimation of  $NO_2$ , 1878, A., 335.
- on brominated benzenesulphonic acids, 1878, A., 492.
- azoxy-, azo-, and hydrazo-compounds, 1878, A., 722.
- hydrazobenzenetetrasulphonic acid, 1881, A., 903.
- azobenzenesulphonic acids, 1882, A., 516.
- acid produced by the action of hydrogen bromide on the diazo-derivative of hydrazobenzenesulphonic acid, 1882, A., 518.
- sulphonic acids of hydroxyazobenzene, 1882, A., 1074.
- azobenzenedisulphonic acids, 1882, A., 1197.
- Limpricht, Heinrich**. See also **Alfred Wilhelm Theodor Berndsen**.
- Lineke, Emil**, action of potash on *p*-phenylsulphuric acid, 1874, 373.
- on two isomeric anthracenemonosulphonic acids and the oxyanthracenes (*anthrols*) derivable from them, 1875, 1196.
- Lindbohm, Carl Georg**, trimetaphosphoric acid, 1875, 1238.
- cyanogen compounds of gold, 1878, A., 131.
- Linde, S.**, clover sickness, 1881, A., 755.
- Lindemann, Ludwig**. See **Carl Theodor Liebermann**.
- Lindemann, Otto**, estimation of silver and gold in cupelled silver, 1878, A., 530.
- Lindenberg, Heinrich**, on methylamido-propionic acid and the formation of homocreatine, 1876, i., 700.
- Linderos, E.**, some constituents of *Adonis vernalis*, 1877, i., 96.
- Lindgren, Waldemar**, mimetosite from Långban, 1882, A., 283.
- Lindhorst, Richard**. See **Adolph Claus**.
- Lindner, Adolf**, zinc ores from the New Helene Mine, at Scharley near Beuthen, Silesia, 1878, A., 475.
- Lindo, David**, action of sulphuric acid and oxidising agents on morphine and its salts, 1877, ii., 906.
- tests for carbolic and nitric acids, 1877, ii., 919.
- test for santonin, 1878, A., 167.
- test for elaterin, 1878, A., 344.
- coloured crystalline compounds from brucine, 1878, A., 437.
- action of ferric chloride and sulphuric acid on opium bases, 1878, A., 678.
- glucose reaction, 1878, A., 1012.



- Lindo, David**, morphine reactions, 1878, A., 1013.  
 — analysis of caoutchouc, 1879, A., 559.  
 — mercuric oxide in grey powder, 1880, A., 930.  
 — improvements in batteries, 1881, A., 1092.  
 — estimation of potassium as platinum-chloride, 1881, A., 1169.  
 — estimation of chlorine with the aid of Gooch's method of filtration, 1882, A., 894.
- Lindström, Gustaf**, composition of magnetic pyrites, 1876, ii., 381.  
 — thannasite, a new mineral from Åreskutan, 1880, A., 16; 1881, A., 235.  
 — berylline containing baryta from Långban, 1881, A., 531.  
 — analysis of thorite from Hitteröe, 1882, A., 290.  
 — analyses of two minerals from Långban, 1882, A., 291.
- Link, A., and Rich. Möckel**, on the delicacy of some reactions for prussic (*hydrocyanic*) acid, 1879, A., 403.
- Link, A.** See also *Carl Arnold August Michaelis*.
- Link, Gustav**, phloroglucolphthalein and diorescinolphthalein, 1881, A., 95.
- Link, Gustav.** See also *Karl Friedrich Otto Seubert*.
- Linnemann, Eduard**, estimation of chlorine, bromine, and iodine by Carus' method, 1873, 527.  
 — formation of trimethylcarbinol (a correction), 1874, 244.  
 — behaviour of acrylic acid to oxidising agents, and to nascent hydrogen evolved from an acid solution, 1874, 356.  
 — allyl compounds and acrylic acid, 1874, 566, 1157; 1875, 355.  
 — separation of propionic acid from formic and acetic acids, 1874, 605.  
 — volatile fatty acids produced by bringing together acetone, bromine, and silver oxide, 1874, 1156.  
 — conversion of acrylic acid into lactic acid, 1876, i., 63.  
 — derivatives of propyl and propylene, etc., 1876, ii., 504.  
 — the inability of propylene to combine with water, 1877, ii., 729.  
 — behaviour of sodium acrylate with fused potash, 1877, ii., 735.  
 — decomposition of propyl glycol at high temperatures, 1878, A., 776.
- Linnemann, Eduard, and C. Penl**, oxidation products of acrolein bromide, 1876, i., 61.
- Linossier, Georges.** See *A. Chapuis*.
- Lintner, Carl Joseph**, influence of malt on the quality and keeping properties of beer, 1881, A., 1090.
- Lintner, Carl Joseph, Michael Kran-dauer, and Theodor Treiber**, effect of artificially manured barley on the composition of the wort, 1879, A., 959.
- Lionet, A.**, purification of hydrogen, 1880, A., 2.
- Lipp, Andreas**, derivatives of isobutaldehyde, 1880, A., 620; 1881, A., 81.  
 — triisobutylidenediamine (a hydr-amide of the fatty series), 1882, A., 164.  
 — *n*-butaldehyde-ammonia and amidovaleric acid, 1882, A., 709.
- Lipp, Andreas.** See also *Emil Erlen-meyer*.
- Lipp, F., and Leopold Schneider**, analyses of iron ores, 1878, A., 838.
- Lippitt, T. P.**, analysis of epidote from near Greenwood, Albemarle Co., Virginia, 1882, A., 21.
- Lippmann, Edmund O. von**, occurrence of triacarballylic acid in beet juice, 1878, A., 662.  
 — sugar from populin, 1880, A., 29.  
 — occurrence of triacarballylic and aconitic acids in beet juice, 1880, A., 36.  
 — occurrence of vanillin in raw sugars, 1880, A., 646.  
 — inversion of raw sugar by carbonic acid and some properties of inverted sugar, 1881, A., 148.  
 — presence of saccharin in osmoseal sugar, 1881, A., 148.  
 — occurrence of malonic acid in the manufacture of beet sugar, 1881, A., 800.  
 — levanul, a new species of gum occurring in beetroot molasses, 1881, A., 888.  
 — occurrence of  $\alpha$ -hydroxyglutaric acid in molasses, 1882, A., 1190.
- Lippmann, Eduard**, on the different behaviour of iodine to mercuric oxide under different conditions, 1876, i., 44.
- Lippmann, Eduard, and Josef Haw-liczek**, artificial oil of bitter almonds, 1877, i., 315.  
 — nitrobenzoyl, 1877, i., 315.  
 — eikosylene, a derivative of brown coal paraffin, 1879, A., 447, 699.
- Lippmann, Eduard, and R. Lange**, condensation of tertiary bases by nitric oxide, 1881, A., 161.  
 — hydroxyacetic acid, 1881, A., 275.

- Lippmann, Edward, and Wilhelm Strecker**, amyldeneaniline, 1879, A., 462, 744.  
 ———— nitroeminaldehyde and its derivatives, 1879, A., 464; 1880, A., 251.
- Lippmann, Edward, and Georg Vortmann**, compounds of cobalt chloride with aniline, 1878, A., 787.  
 ———— compounds of cobalt and nickel chlorides with aniline, 1879, A., 461.
- Lippmann, Gabriel**, relation between electric and capillary phenomena, 1873, 1094.  
 ———— depolarisation of electrodes by metallic solutions, 1878, A., 926.  
 ———— the unit in absolute electrical measurements, 1881, A., 334.
- Lipps, John S.**, malt examination, 1880, A., 929.
- Lischke, Gust.** See **Adolph Claus**.
- Lismann, A.**, phosphorus in copper, 1878, A., 538.
- Lissauer, A.**, practical method of determining the filtering and absorbing powers of different soils for purposes of liquid manuring, 1876, i., 728.
- Lissenko, Konon I.**, formation of phosphonium iodide, 1877, i., 46.  
 ———— Russian and American kerosin, and the employment of heavy mineral oils in lamps, 1878, A., 539.
- List, Karl**, the ammonia soda process, 1875, 195.  
 ———— magnetic compounds having the formula  $RO.Fe_2O_3$ , 1879, A., 13.
- Little, A. N.**, examination of some samples of *ferrum reductum*, 1873, 298.
- Littrow, Arthur von**, conductivity for heat of different soils, 1875, 1150.
- Livache, Ach.**, gases in the tissues of fruits, 1877, ii., 913.  
 ———— abnormal solubility of certain bodies in soaps and alkaline resinates, 1879, A., 99.
- Livinge, George Downing, and James Dewar**, note on the history of the carbon spectrum, 1881, A., 957; 1882, A., 251.  
 ———— on the spectrum of water, 1881, A., 957; 1882, A., 251.  
 ———— spectra of compounds of carbon with hydrogen and nitrogen, 1881, A., 957; 1882, A., 252.  
 ———— identity of spectral lines of different elements, 1881, A., 957; 1882, A., 253.  
 ———— on the spectra of magnesium and lithium, 1881, A., 957; 1882, A., 254.
- Livinge, George Downing, and James Dewar**, reversal of the lines of metallic vapours; titanium, chromium, and aluminium, 1881, A., 957; 1882, A., 254.  
 ———— investigations on the spectrum of magnesium, 1881, A., 957; 1882, A., 255.  
 ———— reversal of the cyanogen spectrum, 1882, A., 1.
- Liversidge, Archibald**, supersaturated saline solutions, 1873, 469.  
 ———— note on a new mineral from New Caledonia, 1874, 613.  
 ———— analyses of Queensland soils, 1881, T., 61.  
 ———— water of hot springs in New Britain and the Fiji Islands, 1881, A., 564, 1019.  
 ———— formation of moss-gold and silver, 1881, A., 687.  
 ———— stilbite from Kerguelen Island, 1881, A., 695.  
 ———— comparison of New South Wales coals, 1881, A., 980.  
 ———— New South Wales minerals, 1881, A., 991.  
 ———— composition of some coral limestones, &c., from the South Sea Islands, 1881, A., 1011.
- Livon, Ch., and J. Bernard**, diffusion of salicylic acid in the animal economy, 1878, A., 994.
- Ljubavin, Nicolai N.**, action of ammonia on valeraldehyde, 1873, 626; 1874, 355.  
 ———— on valeritine, 1873, 1023.  
 ———— glyoxaline and glyoxal, 1876, i., 912; 1882, A., 821.  
 ———— nuclein from cows' milk, 1878, A., 591; 1879, A., 735.  
 ———— conversion of ethyl acetate into butyric acid, 1881, A., 249.  
 ———— action of ammonium cyanate on aldehydes, 1881, A., 796.  
 ———— iron ore containing manganese from the neighbourhood of St. Petersburg, 1882, A., 471.  
 ———— diamidosuccinic acid, 1882, A., 828.
- Lloyd, Frederick James**, on the estimation of retrograde phosphates, 1882, T., 306.
- Lloyd, John Uri**, berberine salts, 1880, A., 169.  
 ———— Yerba mansa, 1880, A., 721.  
 ———— resin of *Leptandra virginica*, 1881, A., 103.  
 ———— citrate of caffeine, 1881, A., 447.
- Lloyd, Rachel.** See **Charles Frederic Matery**.

- Lobanoff**, iodophenols, 1874, 259.
- Locher, Johannes**. See **Victor Meyer**.
- Lockyer, Joseph Norman**, researches on spectrum analysis in connection with the spectrum of the sun, 1873, 340, 994; 1874, 495.
- preliminary note on the elements existing in the sun, 1874, 424.
- spectra of vapours at high temperatures, 1874, 1124; 1876, i., 181.
- spectroscopic notes, 1876, ii., 34.
- new lines in the spectrum of calcium, 1876, ii., 35.
- elements present in the layer of the sun's atmosphere which produce the inversion of the spectral lines, 1878, A., 357.
- recent researches on solar chemistry, 1879, A., 425.
- researches on spectra, 1879, A., 575.
- experiments tending to show the non-elementary character of phosphorus, 1880, A., 1.
- existence of carbon in the coronal atmosphere of the sun, 1880, A., 429.
- spectrum of iron in the sun, 1881, A., 669, 957.
- note on the spectrum of hydrogen, 1881, A., 956.
- new method of spectrum observation, 1881, A., 956; 1882, A., 249.
- spectrum of carbon, 1881, A., 957; 1882, A., 251.
- notes on the reduction of observations of the spectra of 100 sun spots, 1882, A., 250.
- Lockyer, Joseph Norman**, and **William Chandler Roberts-Austen**, quantitative analysis of certain alloys by means of the spectroscopic, 1874, 495.
- absorption spectra of metals volatilized by the oxyhydrogen flame, 1876, ii., 156.
- Lodge, Oliver Joseph**, determination of the specific electrical resistance of certain copper-tin alloys, 1880, A., 687.
- Loë, Adolf**. See **Bernhard Tollens**.
- Löbbecke, H.**, manuring with saltpetre, superphosphate, and precipitated phosphate, 1882, A., 1229.
- Loebisch, Wilhelm Franz**, chemical investigation of a case of cystinurea, 1877, i., 101.
- Loebisch, Wilhelm Franz**, and **A. Looss**, glyceryl xanthates, 1882, A., 164.
- action of carbonic oxide on monosodium glyceride, 1882, A., 377.
- preparation of disodium glyceride, 1882, A., 377.
- Lönnies, Hermann**,  $\gamma$ -isophthalosulphonic acid and  $\gamma$ -hydroxyisophthalic acid, 1881, A., 50.
- Lönnies, Hermann**. See also **Oscar Georg Jacobsen**.
- Lösch, A. A.**, lime iron garnet ("*démantoid*") from Sysstertzk in the Urals, 1881, A., 538.
- Lösecke, A. von**, ozone observations, 1876, i., 339.
- composition of eatable mushrooms, 1877, i., 338.
- formation of ammonium nitrate, 1879, A., 298.
- Lösekann, Gerhard**, action of sulphuretted hydrogen on alkaline solutions of alumina, 1879, A., 437.
- Lössner, Carl Woldemar**, action of antimony pentachloride on some organic compounds, 1876, ii., 282.
- Lössner, Liné**, action of phosphorus chloride and benzoyl chloride on potassium sulphocyanate, 1874, 366.
- action of benzoyl chloride on potassium sulphocyanate in alcoholic solution, 1875, 640.
- Loew, Oscar**, wheelerite, a new fossil resin, 1874, 1073.
- apparatus for oxidation, 1877, ii., 275.
- pyrogallol, 1877, ii., 477, 890.
- action of cyanogen on albumin, 1877, ii., 907.
- rubidium as a substitute for potassium in the plant cell, 1878, A., 909.
- oxidation of albumin by the oxygen of the air, 1879, A., 389.
- detection of lecithin, 1879, A., 835.
- source of hippuric acid in the urine of herbivorous animals, 1879, A., 952; 1880, A., 173.
- synthesis of formic acid, 1880, A., 460.
- lecithin and nuclein in yeast, 1880, A., 816.
- schizomycetic fermentation of quinic acid, 1881, A., 602.
- free fluorine in fluorspar, 1881, A., 785.
- occurrence and formation of fluorine, 1882, A., 459.
- preservation of milk, 1882, A., 1148.
- Loew, Oscar**, and **Thomas Bokorny**, chemical distinctions between living and dead protoplasm, 1882, A., 546.
- aklehyde nature of living protoplasm, 1882, A., 547.
- reducing action of living protoplasm, 1882, A., 882.

- Loew, Osear.** See also *Karl Wilhelm von Nägeli*.
- Loewe, Julius,** on pure gallotannic acid, 1873, 748.
- organic elementary analysis, 1873, 1057.
- occurrence of quercetin and quercitrin in catechu and sumach, 1874, 171.
- tannic acid from sumach, 1874, 171.
- estimation of lead in ores, 1874, 188.
- preparation of hydrogen and oxygen, 1874, 1056.
- estimation of lead sulphate in galena, 1874, 1180.
- catechuic and catechutannic acids, 1875, 75.
- morin, machurin, and moritannic acid, 1876, i., 395.
- quercitrin and quercetin, 1876, i., 708.
- phlorizin and phloretin, 1876, i., 710.
- solubility of silk in an alkaline glycerin copper solution, 1877, ii., 379.
- tannin of oak bark, 1881, A., 901.
- note on incineration, 1881, A., 939.
- Löwenhardt, Emil.** See *Ernst Albert Schmidt*.
- Löwenthal, J.,** testing of indigo, 1873, 96.
- test for free hydrochloric acid in presence of a metallic chloride, 1876, ii., 550.
- estimation of tannin, 1877, i., 745; 1881, A., 473.
- influence of polymerisation on chemical compounds, 1878, A., 108.
- Löwig, Carl,** preparation of sugar from sap of beet-root, 1880, A., 931.
- Löwig, Gustav, and Friedrich Löwig,** preparation of alumina, 1879, A., 490.
- preparation of alkaline aluminates, 1879, A., 491.
- Löwit, Moriz,** estimation of milk fat, 1874, 1018.
- Loges, Gustav.** See *Adolph Emmerling*.
- Lohse, Osc.,** the spectrum of the light of exploding gunpowder, 1875, 119.
- use of oil gas for gas blowpipes, 1878, A., 467.
- Loidl, Franz,** action of chlorine on trimethylcarbinol, 1876, i., 365.
- artificial malic acid from fumaric acid, 1878, A., 784.
- Loir, A.,** chemical functions of acetic anhydride, 1879, A., 621.
- Loir, A.,** a double function of monobasic acids, 1880, A., 31.
- crystallisation of alums, 1881, A., 878.
- Loiseau, Désiré,** estimation of sugar by Barreswil's method, 1873, 1164.
- on a new crystalline organic substance called raffinose, 1876, ii., 397.
- combustion of organic substances in oxygen, 1876, ii., 659.
- Loiseau, Désiré.** See also *E. Boivin*.
- Loiseau, E. P.,** artificial fuel from coal dust, 1873, 420.
- L'Olivier, Victor,** the nitrate of soda industry in South America, 1876, i., 416.
- Lommel, Eugen Cornelius Joseph,** action of coloured light on assimilation of plants, 1873, 292.
- fluorescence, 1877, i., 676; 1878, A., 358.
- dichroic fluorescence of magnesium platinoeyanide, 1880, A., 598.
- Long, John Harper,** action of steam on red-hot charcoal, 1878, A., 961.
- action of alcoholic potash on bromoform, 1879, A., 126.
- electrical conductivity of saline solutions, 1881, A., 71.
- Longi, Antonio,** composition of the crystals deposited on the zincs of Leclanché's battery, 1882, A., 697.
- decomposition of oxalic acid by the action of aqua regia, 1882, A., 715.
- Looss, A.** See *Anton Geuther, Wilhelm Franz Loebisch*.
- Lorenz, Carl,** methylenecaffeic and methylenhomocaffeic acids and their derivatives, 1881, A., 48.
- derivatives of piperonal, 1881, A., 727.
- Lorenz, Carl, and Moritz Blumenthal,** action of nitric acid on stilbene, 1876, i., 242.
- Lorenz, Friedrich,** *m*-toluidine, 1875, 80.
- Lorenz, H.** See *Ed. Sonntag*.
- Lorenz, Louis,** determination of degrees of temperature in absolute units, 1873, 465.
- Lorenz, Norbert von,** action of metallic lead on aqueous solutions of lead nitrate, 1882, A., 364.
- Loretz, Martin Friedrich Heinrich Hermann,** dolomite of South Tyrol, 1881, A., 27.
- Lorin, oxalin,** 1873, 1122.
- action of oxalic acid on polyatomic alcohols, 1873, 1219; 1874, 140; 1875, 1171.

- Lorin**, note on the etherification of glycol, 1875, 51.  
 — a new method of preparing crystallisable formic acid, 1875, 1250; 1876, i., 560.  
 — source of carbon monoxide, characteristic of the formins and of the polyatomic alcohols, 1876, ii., 58.  
 — sources of carbon monoxide; new method of preparing very-concentrated formic acid, 1876, ii., 59.  
 — use of dehydrated oxalic acid to distinguish the polyatomic alcohols; chemical function of inosite, 1878, A., 398.  
 — action of acids on salts without the intervention of a solvent, 1879, A., 689; 1881, A., 873.  
 — influence of heat and the proportion of glycerol on the decomposition of oxalic acid, 1882, A., 389.
- Lorscheid, J.**, red coloration of white lead, 1873, 658.
- Losanitch, Sima M.**, action of benzoic acid on phenylic mustard oil, 1873, 758.  
 — action of potash on tetranitrodiphenylcarbamide, 1879, A., 67.  
 — constitution of tetranitrodiphenylcarbamide, 1880, A., 812.  
 — action of phenylthiocarbamide on the nitranilines, 1882, A., 183.  
 — action of nitric acid on the tribromaniline, 1882, A., 954.  
 — action of carbon bisulphide on *p*-nitraniline, 1882, A., 955.
- Lossen, Ferdinand**, guanidine, an oxidation product of albumin, 1880, A., 413.
- Lossen, Wilhelm Clemens**, structural formulæ of hydroxylamine and its amido-derivatives, 1874, 254; 1875, 634; 1877, ii., 328.  
 — identity of phenylcarbamidol with diphenylurea, 1874, 1169.  
 — on atomic and molecular compounds, 1875, 607.  
 — note on the reducing action of hydroxylamine, 1875, 733.  
 — replacement of the carboxyl group by amidogen, 1875, 769.  
 — on the ammonium compounds, 1876, ii., 629.  
 — the so-called difference in the quantivalence of a multivalent atom, 1881, A., 679.
- Lossen, Wilhelm Clemens**, and **Jos. Zanni**, ethers of hydroxylamine, ethylhydroxylamine, and methylhydroxylamine, 1877, i., 188.
- Loughridge, R. H.**, distribution of soil; ingredients among the sediments obtained in silt analysis, 1874, 1104.  
 — influence of strength of acid and time of digestion in the extraction of soils, 1874, 1105.
- Louguinine**. See **Luginin**.
- Louis, David Alexander**. See **Edward Frankland**.
- Lound, L.**, effects of heat on cane sugar in aqueous solution, 1877, i., 450.
- Louvet, Albéric**, determination of alum and gypsum in wine, 1882, A., 96.
- Love, Ed. G.**, edible earth from Japan, 1880, A., 702.
- Lovisato, Domenico**, the kinzigites of Calabria, 1881, A., 519.
- Lowe, Alfred J. G.** See **Alfred Senier**.
- Lowe, Walter Bozant**. See **Arthur Percy Smith**.
- Lowery, Woodbury**. See **Charles Loring Jackson**.
- Lubarsch, Oscar**, fluorescence, 1875, 528; 1881, A., 70.
- Luca, Sebastiano de**, stalagmitic formations of the Solfatara of Pozzuoli, 1873, 478.  
 — action of the volcanic earth of the Solfatara of Pozzuoli on the diseases of the vine, 1873, 523; 1874, 184.  
 — chemical researches on the cyclamen, 1873, 764.  
 — essential oil of *Achillea Ageratum* (Linn.), 1875, 773; 1877, i., 326.  
 — absorption of ammonia from the air by the volcanic earth of the Solfatara of Pozzuoli, 1875, 779.  
 — presence of lead in the platinum points of lightning conductors, 1876, ii., 340.  
 — on the alcoholic and acetic fermentation of the fruits, flowers, and leaves of certain plants, 1876, ii., 649.  
 — crystallised lead carbonate, formed on objects found at Pompeii, 1877, ii., 843.  
 — presence of lithium in the earths and water of the Solfatara at Pozzuoli, 1879, A., 33.  
 — splitting up of cyclamin into glucose and mannite, 1879, A., 70.  
 — a thread-like substance found in the excavations of Pompeii, 1879, A., 680.
- Lucas, Louis Arthur**, obituary notice of, 1877, i., 505.
- Lucas, R.**, testing of crude anthracene, 1875, 287.
- Luchsinger, Balthasar**, the glycogenic function of the liver, 1874, 489.



**Luchsinger, Balthasar**, artificial suspension of glycogenesis in living animals, 1876, i., 949.

**Lucius**. See **Meister**.

**Luck, Eduard**, detection of carbon bisulphide in mustard oil, 1873, 1054.  
— determination of the specific gravity of gunpowder, 1874, 290.

— estimation of anthracene, 1874, 291.  
— a molecular combination of nitrogen tetroxide and magnesium phosphate, 1875, 238.

— a new indicator for titrating alkalis and acids, 1877, ii., 610.

**Luck, Eduard**. See also *Carl Remigius Fresenius*.

**Luckow, C.**, application of the galvanic current in analytical chemistry, 1880, A., 282.

**Ludwig, Ernst**, the chemical formula of epidote, 1873, 251.

— the constitution of atacamite, 1873, 1010.

— analysis of magnesia mica from Pargas in Finland, 1875, 544.

— milarite, 1879, A., 358.

— modification of Zulkowski's apparatus for the volumetric estimation of nitrogen, 1880, A., 679.

— detection of mercury in animal substances, 1882, A., 99.

— estimation of uric acid, 1882, A., 108.

— distribution of arsenic in the animal organism after administration of arsenious anhydride, 1882, A., 416.

**Ludwig, Ernst**, and **Julius Mauthner**, detection of hydrocyanic acid, 1881, A., 416.

**Ludwig, Johann Friedrich Hermann**, analysis of a soil (salt earth) from the primeval forest of Brazil, 1873, 483.

— constituents of the ash of various parts of the coffee tree, 1873, 525.

— constituents of the seed of the yellow lupin, 1873, 650.

— igasuric acid, 1873, 904.

**Lübavin**. See **Ljubavin**.

**Lüddens, H.**, diphenyl, 1875, 1258.

**Luedecke, Otto**, the glaucophane and glaucophane-bearing rocks of the island of Syra, 1877, ii., 171.

— crystalline form of brucine, 1877, ii., 628.

— the apophyllite of the Radanthal, 1878, A., 945.

— mesolite and scolecite, 1881, A., 1007.

**Lüders, Rudolf**. See **Robert Otto**.

**Lürmann, F.** See **G. Bethke**, **B. Groebe**.

**Luff, Arthur Pearson**. See **Charles Romley Alder Wright**.

**Luginin, Wladimir F.**, alleged synthesis of terebene, 1873, 383.

— heat developed during the formation of the potassium and sodium salts of acetic and trichloroacetic acids, 1873, 1100.

— the quantities of heat evolved during the decomposition of the chloranhydrides of certain fatty acids, 1874, 356.

— heat evolved in the decomposition of the chlorides of several fatty acids, 1875, 631.

— decomposition of bromides of acid radicals, 1875, 738.

— thermochemistry of aniline and other bodies of the same group, 1877, ii., 568.

— thermochemistry of the substituted anilines, 1877, ii., 696.

— thermochemistry of some substituted acetic and benzoic acids, 1878, A., 768.

— thermochemical study of some phenol derivatives, 1878, A., 832.

— influence of substitution on the evolution of heat during the formation of salts, 1879, A., 767, 871.

— heat of combustion of glycerol and of ethylenic glycol, 1880, A., 604.

— heat disengaged in the combustion of some isomeric fatty alcohols, 1880, A., 787.

— heat of combustion of some members of the paraffin series, 1881, A., 9, 966; 1882, A., 567.

— heat of combustion of alcohols of the allyl series, 1881, A., 871.

— heat of combustion of heptane and hexahydrotoluene, 1881, A., 1113.

— heat of combustion of pinacene, 1882, A., 356.

**Luginin, Wladimir F.** See also **Marcellin Berthelot**.

**Lugli, Faustino**, synthesis of naphthylacrylic acid, 1882, A., 205.

**Lundvall, Carl F.** See **Johan Peter Claësson**.

**Lunge, Georg**, determination of chlorine in presence of sulphurous acid, 1875, 185.

— the use of soda-waste in the manufacture of glass, 1876, i., 787.

— note on hydrometallic copper extraction, 1876, ii., 227.

— retardation of chemical reactions by indifferent substances, 1877, i., 42.

- Lunge, Georg**, estimation of nitrous and nitric acids, 1877, ii., 642; 1878, A., 169; 1879, A., 79; 1882, A., 214.
- denitrification of nitrous-sulphuric acid by sulphurous acid, 1877, ii., 941.
- the boiling points of sulphuric acid of different concentration, 1878, A., 553.
- decomposition of sulphur lyes from soda-waste by hydrochloric acid, 1878, A., 755.
- denitrating action of the Glover tower, 1878, A., 757.
- on nitrogen trioxide prepared from starch and nitric acid, and on the nitrogen trioxide of the sulphuric acid chambers, 1878, A., 833.
- application of Witt's tropeolins to titration, 1879, A., 176.
- preparation of nitrous acid, 1879, A., 200.
- existence of nitrous anhydride in the gaseous state, 1879, A., 502; 1882, A., 926.
- antichlor, 1879, A., 676.
- soda industry, 1879, A., 677, 751.
- the amount of sulphuric acid in wines, 1879, A., 762.
- behaviour of the nitrogen acids with sulphuric acid, 1879, A., 770.
- resin sizing of paper, 1879, A., 994.
- researches on nitrous anhydride and nitrogen tetroxide, 1880, A., 91, 440.
- composition and analysis of the binoxide of manganese recovered in the Weldon process, 1880, A., 528.
- composition and analysis of Weldon mud, 1880, A., 611, 704.
- determination of sulphur in pyrites, 1881, A., 193.
- technical notes, 1881, A., 322; 1882, A., 562.
- preparation of pure naphthalene, 1881, A., 1151.
- action of sulphurous anhydride on nitric oxide in presence or absence of oxygen, 1882, A., 139.
- purification of naphthalene, 1882, A., 202.
- determination of nitrous oxide, 1882, A., 244.
- solidifying points of sulphuric acid of different degrees of concentration, 1882, A., 362.
- test methods for soda works, 1882, A., 773, 895.
- behaviour of nitrogen tetroxide (*Japponitric acid*) with sulphuric acid, 1882, A., 1010.
- Lunge, Georg**, behaviour of nitrogen peroxide in the manufacture of sulphuric acid, 1882, A., 1162.
- analysis of dynamite, 1882, A., 1327.
- Lunge, Georg**, and **Fritz Salathé**, formation of sulphuric anhydride in the roasting of pyrites, 1878, A., 351.
- Lunge, Georg**, and **Henry Schaeppi**, formation and constitution of bleaching powder, 1880, A., 789.
- Lunge, Georg**, and **Theodor Steinkauler**, new hydrocarbon from *Sequoia gigantea*, 1881, A., 98; 1882, A., 208.
- Lunin, N.**, importance of inorganic salts in feeding animals, 1881, A., 1050.
- Lupton, Sydney**, the formulae of the alums, 1875, 201.
- cuprous chloride, 1875, 342.
- preparation of nitrogen, 1876, i., 679.
- solubility of naphthalene in water, 1876, i., 914.
- analytical notes:— tests for aniline and for succinic acid, 1876, i., 966.
- on the slow oxidation of potassium, 1876, ii., 565.
- Lurie, Gregor**. See **Karl Birnbaum**.
- Lussy, Robert**, derivatives of toluylene-diamine, 1875, 274, 770, 1036.
- Lustgarten, Sigmond**, a nitric ether formed by the action of nitric acid on glycogen, 1882, A., 159.
- Lux, Friedrich**, volumetric analysis of red lead, 1880, A., 585.
- simple aspirator, 1881, A., 192.
- flavescein, a new indicator, 1881, A., 193.
- Luyne, Victor de**, on Prince Rupert's drops, and the annealing of glass, 1873, 723.
- boric acid, 1876, i., 38.
- decomposition of glass, 1877, ii., 165.
- Luyne, Victor de**, and **Ch. Feil**, researches on hardened glass, 1876, i., 36.
- Luyne, Victor de**, and **Aimé Girard**, the weight of sugar to be taken for polarimetric analysis, 1875, 1293.
- Lwoff, J.**, on vinyl bromide, 1878, A., 963.
- hexamethylethane, 1881, A., 399.
- polymerisation of vinyl bromide, 1881, A., 400.
- Lyman, J. B.** See **James St. Clair Gray**.
- Lynn, James**, morphine determinations, 1878, A., 612.
- Lyte, Farnham Maxwell**, adjustment of volumetric solutions, 1874, 708.

- Lyte, Farnham Maxwell**, volumetric estimation of zinc, 1875, 915.  
 — blowpipe assays of silver lead, 1880, A., 585.  
**Lytle, W. A.**, obituary notice of, 1879, T., 265.

**M.**

- Mabery, Charles Frederic, and Henry Barker Hill**, dimethyluric acid, 1879, A., 48.  
 — — oxidation products of dimethyluric acid, 1881, A., 39.  
**Mabery, Charles Frederic, and Charles Loring Jackson**, *p*-iodobenzyl compounds, 1878, A., 421.  
**Mabery, Charles Frederic, and Rachel Lloyd**, diiodobromacrylic acid and chlorobromacrylic acid, 1881, A., 1125.  
 — — dibromiodiacrylic and chlorobromiodiacrylic acids, 1882, A., 1048.  
**Mabery, Charles Frederic, and Franklin Clement Robinson**, *o*-iodobenzyl bromide and its derivatives, 1882, A., 1057.  
**Mabery, Charles Frederic, and H. C. Webber**, chlorotribromopropionic acid, 1882, A., 1047.  
**Mabery, Charles Frederic**. See also *Henry Barker Hill*.  
**Macadam, Stevenson**, paraffin oils and their action on metals, 1878, A., 355.  
**Macadam, William Ivison**, composition of a nodule of ozokerite found at Kinghornness, 1879, A., 1020.  
**Macagno, Ippolito**, influence of light on vegetation, 1874, 703 ; 1875, 177.  
 — volumetric estimation of glucose, 1874, 714.  
 — fermentation, 1875, 185.  
 — on adding gypsum to must, 1875, 198.  
 — new process for estimating glucose in wine and must, 1875, 484.  
 — volumetric estimation of phosphoric acid, 1875, 780.  
 — function of vine leaves, 1878, A., 90.  
 — action of sunlight on the vine, 1878, A., 162.  
 — bottle glass, 1878, A., 757.  
 — action of the ferment of sour wine on good wine, 1879, A., 817.  
 — analyses of air, 1880, A., 697.  
 — tannin of sumach leaves, 1880, A., 732.  
 — tannin in wine, 1880, A., 775.  
 — estimation of carbon bisulphide, 1881, A., 308.

- Macagno, Ippolito**, detection of aniline colours in red wine, 1881, A., 659.  
 — strength of solutions of sulphur in carbon bisulphide and its application to the analysis of sulphur ores, 1881, A., 844.  
 — detection of artificial colouring matters in red wines by means of the spectroscope, 1881, A., 852.  
 — influence of atmospheric electricity on the growth of grapes, 1881, A., 931.  
 — estimation of tannin in sumach, 1881, A., 1085.  
 — changes which lemon juice undergoes, 1882, A., 435.  
**Macalpine, Thomas**. See *Rudolph Fittig*.  
**Macaluso, Damiano**, the electromotive force of platinum charged with free chlorine, 1874, 1044.  
**McCarter, Henry Gratton**. See *Samuel Philip Sadtler*.  
**McCreath, Andrew S.**, estimation of carbon in iron and steel, 1877, ii., 927.  
**McCreath, David**, action of anhydrides on guanidine and its derivatives, 1875, 465, 885 ; 1876, i., 400.  
**Macdonald, G.**, preparation of the hydrobromides of quinine, morphine, and strychnine, and of calcium bromide, 1874, 590.  
**Macdonald, J. W.**, analyses of cane and beet root sugar ash, 1878, A., 624.  
**McGowen, William Thomas**, the sewage of manufacturing towns, 1874, 100.  
**Mach, Eduard**, the sugar in grapes, 1878, A., 130.  
**Mach, Eduard, and Carl Portele**, mashing of grapes, 1881, A., 126.  
 — — composition of various parts of grapes, 1881, A., 1061.  
 — — influence of acids on the preservation of wine, 1881, A., 1090.  
**Mach, Eduard** (and others), experiments on the lining of wine, 1879, A., 1078.  
 — — tartar and tartaric acid in must and wine, 1880, A., 774.  
**Machattie, Alexander Taylor**, native sodium nitrate or "caliche," 1875, 1166.  
**MacHoul, D. A.**, derivatives of anthraquinonesulphonic acid, 1881, A., 51.  
**MacHugh, M.**, dinitrobenzanilide, 1875, 270.  
**MacIvor, Ralph W. Emerson**, action of chromyl dichloride on iodine, 1874, 26.  
 — phosphorus sulphobromide, 1874, 542.  
 — note on antimony triiodide, 1874, 870.

- MacIvor, Ralph W. Emerson**, indirect estimation of alumina in presence of ferric oxide, 1874, 916.
- potassium permanganate process for estimating iron in hematite iron ores, 1874, 918.
  - antimony tribromide, 1874, 1061.
  - native cuprous sulpharsenate, 1875, 46.
  - bismuth bromide, 1875, 133.
  - arsenious fluoride, 1875, 239.
  - decomposition of the trichlorides of antimony and bismuth, 1876, i., 192.
  - the iodides of antimony, 1876, i., 328.
  - perbromic acid, 1876, i., 677.
  - estimation of arsenic as magnesium ammonium arsenate, and as magnesium pyroarsenate, 1876, i., 756.
- Mackay, John**, obituary notice of, 1882, T., 237.
- McKendrick, John Gray**, and **James Dewar**, physiological action of the quinoline and pyridine bases, 1875, 1276.
- Mackenzie, John James**, absorption of gases by saline solutions, 1877, ii., 833.
- Mackenzie, John James**, and **Edward Leamington Nichols**, expansion of liquids and absorption of gases, 1878, A., 366.
- Mackintosh, James B.**, electrolytic determination of copper and composition of so-called allotropic copper, 1882, A., 428.
- electrolytic determination of copper by Luckow's process, 1882, A., 660.
- McLeod, Herbert**, note on the formation of ozone during the slow oxidation of phosphorus, 1880, T., 118.
- MacMunn, Charles Alexander**, researches on the colouring matters of human urine, with an account of their artificial production from bilirubin and hematin, 1881, A., 1056.
- McNab, James**, change in colour during winter of certain Cupressineæ, 1874, 493.
- Mactear, James**, regulation of the escape of sulphur gases in the manufacture of sulphuric acid, 1877, ii., 815.
- on the part played by carbon in reducing the sulphates of the alkalis, 1878, T., 475.
  - improvements in the manufacture of soda and potash, 1879, A., 122.
  - loss of nitre in the vitriol manufacture, 1879, A., 838.
  - estimation of nitrous compounds in the manufacture of sulphuric acid, 1880, A., 745.
- Mader, C.**, apple and pear wine, 1879, A., 1078.
- Mäder, Hermann**, chemical investigation of the Thuringian slates in the neighbourhood of Lehesten near Gräfeuthal, 1874, 196.
- Märcker, Max Heinrich**, determination of nitrogen in organic substances, 1873, 532.
- action of diastase on starch, 1878, A., 969.
  - gravimetric estimation of dextrose by means of an alkaline copper solution, 1879, A., 180.
  - density of the mash, 1880, A., 517.
  - manuring sugar beet, 1880, A., 741, 923; 1881, A., 842, 1078; 1882, A., 654.
  - the best mode of applying artificial manure to potatoes, 1880, A., 824.
  - influence of the manure on potato disease and on the starch in potatoes, 1880, A., 915.
  - employment of potassium salts as manure, 1881, A., 839.
  - preservation of diffusion residues from beet sugar manufacture, 1881, A., 932.
  - relative value of soluble and insoluble phosphates as manure, 1881, A., 1073.
  - retardation of fermentation by certain substances, 1882, A., 80.
  - comparative value of "reduced" and "soluble" phosphoric acid in superphosphates, 1882, A., 91.
  - contributions from the experimental station at Halle, 1882, A., 422.
  - value of different varieties of sugar beet, 1882, A., 424.
  - manuring fen lands with kainite, 1882, A., 771.
  - suggestions for a uniform method of estimating soluble phosphoric acid, 1882, A., 994.
  - potash salts as manures for sugar beets, 1882, A., 1130.
  - valuation of crude spirit, 1882, A., 1145.
  - new source of phosphoric acid, 1882, A., 1229.
- Märcker, Max Heinrich**, and **O. Abesser**, estimation of nitrogen in albuminoids, 1871, 392.
- Märcker, Max Heinrich**, and **Ernst Wein**, spent hops as a fodder for cattle, 1880, A., 502.
- Märcker, Max Heinrich**. See also **O. Abesser, Paul Behrend**.

- Magatti, Giuseppe**, action of sulphuric anhydride on phenylthiocarbimide, 1879, A., 312.  
 — ethylene ether of pyrogallol, 1880, A., 250.  
 — oxidation of substituted phenols, 1880, A., 613.  
 — a derivative of quinol, 1881, A., 595.  
 — attempted synthesis of pyrogallol, 1882, A., 175.  
 — action of bromine on naphthalene, 1882, A., 203.
- Mager, Ernst.** See **Rudolph Fittig**.
- Magerstein, Vincenz Theobald**, physico-chemical changes produced in potato starch by boiling, 1882, A., 422.  
 — the time at which potash exercises the greatest influence on plants, 1882, A., 988.
- Magerstein, Vincenz Theobald**, and **Franz Bilek**, effect of pruning the tops and roots of fruit trees on their development, 1882, A., 1221.
- Magnien, Lucien.** See **Camille Saint-pierre**.
- Magnier de la Source, Louis**, estimation of urea in uric acid by means of sodium hypobromite, 1875, 916.  
 — determination of the residue of wine, 1877, i., 752.  
 — colloidal ferric hydrate, 1880, A., 792.
- Magnier de la Source, Louis.** See also **E. Latour**.
- Mahn, M.** See **Karl Birnbaum**.
- Mahon, Robert W.**, volumetric estimation of zinc by titration with potassium ferrocyanide, 1882, A., 775.  
 — derivatives of *p*-hydroxy-*m*-toluic acid, 1882, A., 1205.  
 — benzoyl derivatives of the xylene-sulphonamides, 1882, A., 1208.
- Mahony, Cornelius A.**, loss through volatilisation in the Cornish copper assay, 1873, 192.
- Mahrenholtz, and Paul Gilbert**, an azobenzenesulphonic acid, 1880, A., 801.
- Maikopar, Boris**, action of phenol and caustic potash on dinitrochlorobenzene, 1873, 1026.
- Mailfert**, oxidation by ozone, 1882, A., 797.  
 — action of ozone on metallic salts and oxides, 1882, A., 1161.
- Maillet, Ed.**, aniline derivatives of sebacic acid, 1879, A., 376.
- Main, Philip Thomas**, a new and accurate method of determining boiling points with small quantities of liquid, 1877, i., 680.
- Mainzer, Karl**, products of the decomposition of mixed aromatic thiocarbamides, 1882, A., 1212.
- Maisch, John Michael**, monobromocamphor, 1871, 582.
- Maissen, Pietro**, the meteorite of Abbarello, 1880, A., 369.  
 — preparation of camphoric acid and camphoric anhydride, 1880, A., 893.
- Majert, Wilhelm.** See **Hans Hübner**.
- Makowsky, Alexander**, pseudochrysolites (*bottle-stones*) of Moravia and Bohemia, 1882, A., 581.
- Makris, Const.**, Will and Varrentrapp's method for determining nitrogen, 1877, ii., 917.
- Malaguti, Faustino Giorila Mariano**, obituary notice of, 1879, T., 266.
- Malassez, Louis Charles**, the number of the red blood corpuscles of mammals, birds, and fishes, 1873, 289.
- Malesci, O.** See **P. Chiappe**.
- Mellard, J. A.**, action of sulphuric acid on lead, 1875, 791.
- Mellard, François Ernest**, action of silica and some analogous oxides on sodium carbonate at high temperatures, 1873, 135, 243.  
 — theory of crystals, 1876, ii., 374.  
 — bravaisite, a new mineral, 1879, A., 442.  
 — boracite, 1881, A., 397.  
 — production of crystallised iron phosphide, and of anorthite by the fires in the coal beds at Commeny, 1881, A., 690.  
 — crystalline form of iron manganese, 1881, A., 789.  
 — danger of gas explosions, 1882, A., 920.
- Mellard, François Ernest**, and **Henry Louis Le Chatelier**, detection of marsh gas in the air of mines, 1879, A., 673.  
 — — temperature of ignition of gaseous mixtures, 1881, A., 778.  
 — — velocity of propagation of inflammation in explosive gaseous mixtures, 1881, A., 971.  
 — — specific heats of gases at high temperatures, 1882, A., 449.  
 — — temperatures of combustion and dissociation of carbonic anhydride and water vapour, 1882, A., 453.
- Mellet, John William**, analysis of American buffalo bones, 1875, 375.  
 — achrematite, a new molybdoarsenate of lead from Mexico, 1875, 1141.  
 — on certain reactions of tungsten, 1875, 1228.  
 — limonite with the colour and translucency of gothite, 1876, i., 348.



- Mallet, John William**, the gases accompanying meteorites, 1876, i., 892.  
 — on aluminium nitride, and the action of metallic aluminium upon sodium carbonate at high temperatures, 1876, ii., 349.  
 — on the volatility of barium, strontium, and calcium, 1876, ii., 354.  
 — fluid contained in a cavity in fluor-spar, 1877, ii., 144.  
 — density of solid mercury, 1878, A., 273.  
 — sipylite, a new niobate from Amherst Co., Virginia, 1878, A., 384.  
 — guanajuatite or selenide of bismuth from Guanajuato, Mexico, 1878, A., 651; 1881, A., 361.  
 — production of magnesium nitride by smothered combustion of magnesium in air, 1878, A., 934.  
 — on a fourth mass of meteoric iron from Augusta Co., Virginia, 1878, A., 959.  
 — on chlorostannic acid, 1879, T., 524.  
 — nitrogen iodide, 1879, A., 882.  
 — barcenite, a new antimonate from Huizuco, Mexico, 1879, A., 1022.  
 — revision of the atomic weight and quantivalence of aluminium, 1880, A., 701; 1882, A., 279.  
 — molecular weight of hydrofluoric acid, 1881, A., 973.  
 — determination of organic matter in potable water, 1882, A., 1324.  
**Mallett, Robert**, volcanic energy, 1873, 362.  
 — alleged expansion of metals during solidification, 1874, 1047.  
**Malligand, E.**, and (*Mlle.*) **E. Brossard-Vidal**, Vidal's ebullioscope, 1874, 1014.  
**Mallmann, Fr.** See **Adolph Claus**.  
**Maltschewsky, Paul**, aniline dithionate, 1880, A., 240.  
**Maly, Richard L.**, sulphohydantoin or glycolyl sulphurea, 1873, 1131.  
 — derivatives of sulphurea, 1874, 684.  
 — identity of choletelin and urobilin, 1874, 993.  
 — source of the acid of the gastric juice, 1875, 92.  
 — the chemical composition and physiological function of peptones, 1875, 471.  
 — bile pigments, 1875, 651; 1876, ii., 210.  
 — formation of sarcolactic (*paralactic*) acid by fermentation, 1875, 1175.  
 — on the change produced by diffusion in the reaction of a solution of mixed salts: and on the secretion of acid urine from alkaline blood, 1876, i., 875.  
**Maly, Richard L.**, compounds of sulpho-carbamide with salts, 1876, i., 911.  
 — the means whereby acids are produced in the organism, 1878, A., 593.  
 — nitrosothiolhydantoin, 1879, A., 712.  
 — formation of free sulphuric acid in the Gastropoda, especially *Dolium gulca*, 1881, A., 298.  
 — changes of temperature during digestion, 1881, A., 926.  
 — yolk pigments, 1882, A., 76.  
 — "acidity" of blood-serum and other animal fluids, 1882, A., 1221.  
**Maly, Richard L.**, and **Eudolf Andreasch**, nitrosothioglycollic acid, 1880, A., 630.  
 — caffeine and theobromine, 1882, A., 629.  
**Maly, Richard L.**, and **Julius Donath**, the chemistry of the bones, 1874, 277.  
**Maly, Richard L.**, and **Franz Hinteregger**, caffeine and theobromine, 1881, A., 747.  
 — action of bromine on caffeine, 1882, A., 629.  
**Mandelin, Karl Fr.**, quinine citrates, 1879, A., 1043.  
 — occurrence of salicylic acid in the Violaceae, 1882, A., 548.  
**Manetti, Luigi**, and **Giovanni Musso**, estimation of matter precipitated from milk by rennet, 1877, ii., 940.  
 — an error in the estimation of fat in milk and in milk products, 1877, ii., 941.  
 — composition and ripening of Parmesan cheese, 1878, A., 334.  
 — composition of skimmed whey, 1879, A., 856.  
**Maneuverier, Georges**. See **Jules Célestin Jamin**.  
**Mann, Carl**, utilisation of bye-products in the uranium manufacture, 1875, 1303.  
 — new volumetric method for estimating zinc, 1879, A., 1054.  
 — detection of water in alcohol and ether, 1880, A., 679.  
**Mann, Wilhelm**, methyldeoxybenzoin, 1881, A., 1034.  
**Mann, Wilhelm** See also **Carl Graebe**.  
**Manoury**, recovery of sugar from molasses, 1879, A., 844.  
 — method of desugarising molasses, 1880, A., 357.  
**Maquenne, Léon**, researches on the emissive power of leaves, 1875, 1216.  
 — vegetation of oil-producing plants, 1881, A., 60.  
 — absorptive and diffusive power of leaves, 1882, A., 81.  
 — action of ozone on manganoous salts, 1882, A., 1032.

- Maquenne, Léon.** See also *Pierre Paul Dehérain, A. Millot.*
- Marais, Jacques Hyacinthe,** action of water on lead plates, 1874, 233.
- Marcano, Vicente,** fermentation of starch: presence of a vibriole in germinating maize and in the stalk of the plant, 1882, A., 1311.
- Marcano, Vicente, and Achille Müntz,** utilisation of the banana, 1879, A., 568.
- Marcet, William,** on the nutrition of muscular and pulmonary tissue. Part I. On the nutrition of muscular tissue in health, 1873, 77.
- on the nutrition of muscular and pulmonary tissues in health and when affected by disease from phthisis. Part II., 1873, 186.
- on the mode of application of Pettenkofer's process for the determination of carbonic acid in expired air, 1880, T., 493.
- the function of respiration at different altitudes on the Island and Peak of Teneriffe, 1880, A., 483.
- Marchand, Charles,** abnormal composition of human milk, 1880, A., 332.
- Marchand, J. Eugène A.,** measurement of the chemical intensity of solar light, 1874, 12, 525.
- peculiar mineralogical state of silica, 1874, 777.
- milk from cows of different races, 1879, A., 749.
- analysis of milk, 1880, A., 828.
- the acidity of milk, 1881, A., 473.
- Marchetti, C.,** some naphthol derivatives, 1880, A., 260.
- action of aluminium chloride on a mixture of naphthalene and ethyl chloride, 1881, A., 1041.
- ethylnaphthalene and some of its derivatives, 1882, A., 410.
- Mareck, Friedrich,** quantitative determination of silver in galvanic silver baths, 1881, A., 468.
- pigment for floors, wood, stone, and brickwork, 1881, A., 483.
- Marek, Gustav,** damage to seed peas by weevil, 1880, A., 734.
- Bertel's method of sugar beet growing, 1882, A., 244.
- Margottet, Julien,** metallic selenides and tellurides, 1877, ii., 570.
- Margottet, Julien.** See also *Paul Hautefeuille.*
- Marguerite-Delacharlonny, P.,** new aluminium sulphate, 1880, A., 792.
- Marié-Davy, Edme Hippolyte,** ozone in atmospheric air, 1876, ii., 171.
- Marié-Davy, 'Edme Hippolyte,** proportion of carbonic anhydride in the air, 1880, A., 334, 788.
- experiments with sewage, 1881, A., 936.
- Marié-Davy, Edme Hippolyte** (and others), loss of dried substance in plants during ripening, 1880, A., 820.
- Marignac, Jean Charles Gattissard de,** chemical and crystallographic notices on some salts of glucinum and the metals of cerite, 1874, 24.
- solubility of calcium sulphate, 1874, 1060.
- researches on the simultaneous diffusion of certain salts, 1875, 35.
- specific heat of saline solutions, 1877, i., 31.
- on the discovery of a new earth announced by J. L. Smith, 1879, A., 13.
- the gadolinite earths, 1879, A., 113.
- ytterbium, a new metal from gadolinite, 1879, A., 118.
- the earths of samarskite, 1881, A., 73.
- Markl, Anton,** artificial yeast for molasses distilleries, 1879, A., 1078.
- composition of "grains" from malt, 1880, A., 148.
- Markoe, George Francis H.,** new method of preparing phosphoric acid, 1877, i., 683.
- on the volatile oil of the leaves of *Myrcia acris*, 1878, A., 799.
- Markownikoff, Wladimir B.,** formation of ethyl acetate, 1874, 144.
- action of phosphorus pentachloride on ethyl diethoxalate, 1874, 144.
- action of phosphorus pentoxide on ethal, 1874, 144.
- action of sulphuric acid on isobutaldehyde, 1874, 144.
- oxidation: products of dichlorhydrin, 1874, 241.
- on the isomeric pyrotartaric acids, 1874, 359; 1877, i., 61.
- oxidation of the oxy-acids of the fatty series, 1875, 880.
- on the laws which regulate direct additive reactions, 1876, i., 338.
- on *n*-oxy-pyrotartaric acid and its isomerides, 1877, i., 63.
- acetone in urine, 1877, i., 101.
- determination of theine in tea, 1877, i., 110.
- *n*-pyrotartaric anhydride, 1878, A., 30.
- a six-carbon glycerol, 1881, A., 146.

- Markownikoff**, *Wladimir B.*, itaconic anhydride, 1881, A., 155.  
 — dichlorhydrin and its oxidation products, 1881, A., 1120.
- Markownikoff**, *Wladimir B.*, and *A. Krestownikoff*, tetrenedicarboxylic acid (*homaitaconic acid*), 1880, A., 238; 1881, A., 1127.
- Markownikoff**, *Wladimir B.*, and *W. Ogloblin*, researches on petroleum from the Caucasus, 1882, A., 390.
- Marmé**, *Wilhelm*, taxine, a poisonous alkaloid contained in the leaves and seeds of *Tarus baccata*, L., 1877, i., 476.
- Marpmann**, *G.*, interference of bacteria with brewing, 1881, A., 1090.
- Marquardt**, *Friedrich Wilhelm*, malt combings a source of yeast, 1880, A., 518.
- Marquardt**, *L.*, estimation of fusel oil in brandy, 1882, A., 1235, 1327.
- Marquart**, *Paul Clunior*, researches on Friedburg's paper on carbon bisulphide, 1876, i., 679.
- Marreco**. See **Freire-Marreco**.
- Marro**, *M.* See **Fausto Sestini**.
- Marsden**, *R. Sydney*, on a new borocopper compound of the formula  $B_2Cu_3$ , 1880, T., 672.  
 — on a new theory of the conversion of bar-iron into steel by the cementation process, 1881, T., 149.  
 — preparation of adamantane carbon or diamonds, 1881, A., 682.  
 — crystallisation of silica from fused metals, 1882, A., 571.
- Martenson**, *J. F.*, temperature regulator for gas and lamp flames, 1873, 471.  
 — extract of litmus, 1874, 1099.
- Martin**, *August*, *Carl Arnold Ruge*, and *Rudolf Biedermann*, researches on the urine of new-born children, 1876, i., 410.
- Martin**, *Emile*, determination of the true elementary bodies, by the action of electric currents in the voltameter, 1874, 950.
- Martin**, *Georg*, a Japanese cinnamon bark, 1879, A., 320.  
 — constituents of *Ligustrum Itoha*, 1879, A., 330.  
 — *Scopolin japonica*, 1879, A., 333.  
 — *Ecodia glauca*, 1879, A., 333.
- Martin**, *Georg*, and *Jagi*, *Paronia Montan*, 1879, A., 306.
- Martin**, *Georg*, and *Katzujama*, investigation of the seeds of *Cornellia japonica*, 1879, A., 330.
- Martin**, *K.*, hemihedry of the diamond, 1880, A., 854.
- Martin**, *K.*, phosphoritic limestones of the island of Bonaire, W. Indies, 1881, A., 391.
- Martin**, *Louis*, influence of a limited supply of air on the sulphuretted waters of Eaux-Bonnes, 1873, 861.
- Martin**, *Nicholas Henry*, note on diphenylamine as a test for nitric and nitrous acids, 1877, ii., 918.
- Martinoff**, *A.*, dichloropropylene, 1876, i., 541.
- Martiny**, *Benno*, Scherff's process for preserving milk, 1882, A., 1016.
- Marvin**, *Tasker H.*, production of spectra by the oxyhydrogen flame, 1876, ii., 156.
- Marx**, *Carl von*, use of cœrulignone in calico-printing, 1874, 1028.
- Marxow**, *Fleischl von*. See **Fleischl von Marxow**.
- Mascart**, *Eleuthère Elie Nicolas*, comparison of different electrical machines, 1873, 839.  
 — refraction of organic bodies in the gaseous state, 1878, A., 359, 693.  
 — atmospheric electricity, 1880, A., 783.  
 — absolute measurements of currents by electrolysis, 1881, A., 958.  
 — estimation of carbonic anhydride in the atmosphere, 1882, A., 1137.
- Mascazzini**, *Anton*, new method of assaying lead ores, 1873, 1055.
- Mascazzini**, *Anton*, and *Giuseppe Parodi*, assay of zinc ores, 1877, ii., 221.
- Mascazzini**, *Anton*. See also **Giuseppe Parodi**.
- Maschke**, *O.*, development of heat by the friction of liquids against solids, 1873, 242.  
 — amorphous silicic acid, 1873, 243.  
 — a blue solution of molybdic acid as a reagent, 1874, 1176.  
 — recovery of molybdic acid from filtrates obtained in the estimation of phosphoric acid, 1874, 1177.  
 — detection of molybdenum, 1874, 1178; 1876, i., 442.  
 — on the use of hæmatoxylin as an indicator in acidimetry, 1876, i., 710.  
 — Böttger's sugar test, 1877, ii., 930.  
 — creatinine reaction, 1878, A., 688.
- Masing**, *Emil*, the resin of the larch agaric, 1876, i., 612.  
 — alkaloids ofcelandine (*Chelidonium majus*), 1877, i., 477.  
 — estimation of veratrine and physostigmine, 1877, ii., 367.  
 — comparative examination of the most important kinds of commercial gum arabic, 1880, A., 827.

- Masing, Emil**, examination of various kinds of gum arabic and of tragacanth, 1881, A., 212.
- Masino, Felice**, compounds of the myristic series, 1880, A., 160.
- Masino, Felice**. See also *Hugo Schiff*.
- Maskelyne, Nevil Story**, crystallographic characters of nitrosoterpene, 1875, 518.
- andrewsite and chalkosiderite, 1875, 586.
- the pitted surface of meteorites, 1877, i., 180.
- artificial diopside formed in a Bessemer converter, 1879, A., 513.
- enstatite from South Africa, 1879, A., 513.
- Maskelyne, Nevil Story**, and *Walter Flight*, mineralogical notices: calcidomite, lanarkite, 1874, 101.
- Maskelyne, Nevil Story**. See also *William James Russell*.
- Mason, Alfred Henry**, adulterated linseed oil, 1881, A., 473.
- hydrogen peroxide, 1881, A., 474.
- Massenbach, G. (Freiherr) von**, experiments with artificial manures, 1879, A., 958, 1050.
- Massie**, note on the silicates of potassium and sodium, 1876, i., 120.
- Massie, F. A.**, composition of dufrenite from Rockbridge Co., Virginia, 1881, A., 529.
- analysis of amphibole from Amelia Co., Virginia, 1881, A., 538.
- Masson, David Orme**, and *William Ramsay*, on the volumes of sodium, bromine, and phosphorus at their boiling points, 1881, T., 49.
- Mastbaum, Hugo**. See *Carl Theodor Liebermann*.
- Masters, Maxwell Tylden**, and (*Sir*) *Joseph Henry Gilbert*, influence of various manures on different species of plants, 1873, 522.
- Masure, Felix**, researches on the evaporation of exposed water and that in soil, and on the transpiration of plants, 1882, A., 87.
- Matczek, Eduard**, amounts of lime in milk of lime of different strengths, 1875, 1052.
- recovery of sugar from molasses, 1879, A., 844.
- Mathias, C.** See *Carl Arnold August Michaelis*.
- Mathieu, Edouard**, and *Victor Urbain*, the part played by gases in the coagulation of albumin, 1873, 1247; 1875, 372; 1876, i., 87.
- the gases of the blood, 1874, 869.
- Matsmoto, Kieta Ukimori**, phenyloxy-crotonic acid, 1876, i., 80.
- derivatives of methylprotocatechuic acid, 1878, A., 500.
- Matsmoto, Kieta Ukimori**. See also *Ferdinand Tiemann*.
- Matsui, Naokichi**, examination of the raw materials used for Arita porcelain, 1881, A., 667.
- Matthews, Francis Edward**. See *Ludwig Claisen*.
- Matthey, F.**, lignite coke as a substitute for bone-black, 1878, A., 828.
- decomposition of lead sulphate by sodium chloride, 1879, A., 124.
- Matthey, George**, preparation of iridio-platinum, 1879, A., 772.
- preparation of platinum, 1881, A., 792.
- Matthieu, A.**, comparative rainfall on woods and fields, 1880, A., 737.
- Mattiolo, Ettore**. See *Alfonso Cossa*.
- Matzkewitsch**, distribution of zinc in the animal body after hypodermic injection, 1878, A., 593.
- Maudet**, chemical composition of the parenchyma of certain vegetables, 1871, 184.
- Maugini, Francesco**, potassio-bismuthous iodide as a test for alkaloids, 1882, A., 900.
- Maumené, Edmé Jules**, composition of potassium permanganate, 1874, 1138.
- new method of estimating metals which yield indefinite oxides, 1874, 1180.
- evolution of red fumes during the evaporation of sugar solutions in the vacuum pans, 1875, 108.
- Japan bronze, 1875, 790.
- researches on invert sugar, 1875, 1179.
- modification of sulphuric acid by boiling, 1876, i., 188.
- a new element in the determination of the heats of chemical action, 1876, i., 868.
- a new method of alcoholometry, 1876, ii., 651.
- observations respecting a dextrogyrate acid in wine, 1877, i., 456.
- products of fermentation in the refuse of Paris, 1877, ii., 915.
- on alcoholic potash, 1878, A., 655.
- dietic acid, a new acid obtained by the action of potassium permanganate on sugar, 1878, A., 971.
- composition of slate, 1879, A., 1021.
- compounds of hydracids with ammonia, 1880, A., 4.



- Maumené, Edmé Jules**, oxygen acids of sulphur, 1880, A., 5.  
 — fermentation of glucose, 1880, A., 863.  
 — ammonium carbonate, 1881, A., 414.  
 — decomposition of mercury and silver cyanides, 1881, A., 794.  
 — action of nitric acid on metals, 1881, A., 876.  
 — action of sulphuric acid recently heated to  $320^{\circ}$  on oils, 1881, A., 971.  
 — "deciline," 1881, A., 1021.  
 — new method of analysing oils, 1881, A., 1084.  
 — rectification of alcohols, 1882, A., 487.  
 — inversion of sugar by carbonic anhydride, 1882, A., 490.  
 — theory of formates, 1882, A., 496.  
 — estimation of solid matter in wines, 1882, A., 557.  
 — action of ammonia on cupric oxide, 1882, A., 1266.  
**Maumené, Edmé Jules, Cail** (& Co.), patent process for preparing inverted sugar, 1880, A., 425.  
**Mauro, Francesco**, the spinel of Tiriolo in Calabria, 1879, A., 694.  
 — sodium ammonium trimolybdate, 1882, A., 468.  
**Mauro, Francesco, and Lèobaldo Danesi**, volumetric determination of molybdic acid, 1881, A., 1083; 1882, A., 555.  
**Mauro, Francesco, and Ruggiero Panebianco**, molybdenum dioxide, 1882, A., 701.  
 — molybdenum fluorides, 1882, A., 1171.  
**Mauthner, Julius**, decomposition of neurine, 1873, 630.  
 — analysis of eclogite from Eibiswald in Styria, 1873, 1116.  
 — behaviour of neurine towards albuminoids, 1875, 1206.  
 — rotatory power of tyrosine and cystine, 1882, A., 1206.  
**Mauthner, Julius, and Wilhelm Suida**, brominated propionic and acrylic acids, 1881, A., 889.  
 — dibrom- and tribrom-acrylic acids, 1882, A., 162.  
**Mauthner, Julius**. See also *Ernst Ludwig*.  
**Maxwell, James Clerk**, on the dynamical evidence of the molecular constitution of bodies, 1875, 493.  
**Maxwell, Thomas**, *p*-nitrophenylacetic acid, 1880, A., 119.  
**May, Oscar**. See *Adolph Claus*.  
**May, William Chance**, determination of lead as peroxide, 1874, 1100.  
**Mayençon**, certain volatile products from burning coal mines, 1878, A., 380.  
 — presence of cerium in the coal measures of St. Etienne, 1881, A., 21.  
**Mayençon and Bergeret**, detection of mercury in extracts and in urine, 1874, 602.  
 — detection of arsenic, 1874, 1008.  
**Mayer, Adolf**, relation of lime to carbonic acid in well water, 1874, 138.  
 — researches on alcoholic fermentation, 1874, 177.  
 — absorption of ammonia by the aerial organs of plants, 1874, 385; 1875, 658.  
 — influence of oxygen on fermentation, 1874, 913; 1880, A., 908; 1881, A., 479.  
 — exhalation of oxygen by plants in the absence of carbon dioxide, 1876, i., 95.  
 — on the function of organic acids in plants, 1876, i., 414.  
 — on the course of respiration in germinating wheat, 1876, i., 416.  
 — dependence of plant respiration upon temperature, 1877, i., 331.  
 — combustibility of and amount of chlorine in manured tobacco, 1880, A., 417.  
 — examination of dog biseuit, 1880, A., 836.  
 — a new skinning process, 1880, A., 933.  
 — manuring with potassium salts as manures, 1881, A., 459, 840.  
 — estimation of the absorptive power of soils, 1881, A., 637.  
 — American preserved meats, 1881, A., 771.  
 — influence of an increased quantity of carbonic anhydride on the growth of plants, 1881, A., 1060.  
 — action of rennet ferment, 1881, A., 1183; 1882, A., 1149.  
 — composition of duck weed (*Lemna trisulca*), 1882, A., 422.  
**Mayer, Adolf, and Wilhelm Hagemann**, temperature at which invertin is destroyed, 1882, A., 378.  
**Mayer, Adolf** (and others), fermentation in presence of organic salts, 1881, A., 836.  
 — manuring experiments on unfertile sandy heath, 1882, A., 654.  
**Mayer, Adolf**. See also *Woldemar von Knieriem*.



- Mayer, E. Ludwig**, and **Charles Romley Alder Wright**, the polymerides of morphine and their derivatives, 1873, 211.
- oxidation and decomposition products of morphine derivatives, 1873, 1082.
- Mayer, Jaques**, formation of glycogen in the liver, 1878, A., 905.
- Mayer, Jaques**. See also **Hermann Oppenheim**.
- Mayer, Leopold**, new method for the estimation of arsenious acid in presence of arsenic acid, 1881, A., 195.
- Mayet, Valéry** (and others), researches on phylloxera, 1881, A., 1069; 1882, A., 82.
- Mayrhofer, Joseph**. See **Ednard Donath**.
- Mazurowska**. See **Orlowsky**.
- Mazzara, Girolamo**, nitro-derivatives of salicylic aldehyde, 1877, i., 597.
- a nitro-derivative of *p*-oxybenzoic aldehyde, 1877, ii., 787.
- tests for glucose, 1878, A., 686.
- tolylphenol, 1880, A., 161.
- hydroxyazobenzene and *p*-methylhydroxyazobenzene, 1880, A., 163.
- *m*-amidocinnamic acid, 1880, A., 163.
- tetrabromodibenzyl-*p*-dimethylphenylamine, 1880, A., 879.
- *p*-ethylmethylphenol, 1880, A., 882.
- action of benzyl chloride and zinc on natural thymol, 1882, A., 171.
- benzyloxyphenylacetic and *p*-methylbenzyloxyphenylacetic acids, 1882, A., 103.
- synthesis of phenols by means of anhydrous magnesium chloride, 1882, A., 838.
- benzyloxyphenyl- $\alpha$ -propionic acid and benzyl-*p*-methyloxyphenyl- $\alpha$ -propionic acid, 1882, A., 1072.
- propyl-*m*-cresol and its derivatives, 1882, A., 1198.
- Mazzara, Girolamo**. See also **Emanuele Paternò**.
- Meanwell, Charles Wright**. See **Edmund James Mills**.
- Medicus, Ludwig**, constitution of the uric acid group, 1875, 555.
- decomposition of uroxyanic acid, 1877, i., 69.
- decomposition of glyoxalylurea, 1877, ii., 599.
- testing the progress of putrefaction in manure heaps, 1881, A., 937.
- Medicus, Ludwig**, and **S. Scherer**, testing butter, 1880, A., 587.
- Medicus, Ludwig**, and **E. Schwab**, estimation of starch in sausages, 1879, A., 979.
- Medicus, Ludwig** (and others), butter analysis, 1881, A., 66.
- Medin, Oscar**, on Hager's method of estimating cinchona alkaloids, 1873, 653.
- Medinger, Emil**. See **Carl Hell**.
- Meer, Edmund ter**, compounds of phenols and aldehydes, 1875, 158.
- dinitroethane, 1875, 1182.
- dinitro-compounds of the fatty group, 1876, i., 67; ii., 185.
- retort for the preparation of ketones and aldehydes by the distillation of calcium salts, 1876, ii., 395.
- Méhay, Auguste**, oxidation of acetic acid in the cold in liquids, neutral or alkaline, containing nitrates and phosphates of potassium and sodium, 1876, i., 367.
- Méhay, Louis**. See **Eugène Porion**.
- Mehlis, Theodor**, heptonic acid (*amanthelic acid*) from cenanthol and some of its derivatives, 1878, A., 131.
- Mehlis, Theodor**. See also **Hugo Weiske**.
- Mehrle, N.**, improvement in sugar manufacture, 1882, A., 122.
- Mehrtens, Hermann**. See **Julius Post**.
- Méhu, Camille Jean Marie**, iron tartrates and citrates and their ammoniacal compounds, 1874, 42.
- bismuth, its alloys with the alkaline metals, and its purification, 1874, 131, 1024.
- density of cholesterol, 1875, 247.
- on the non-existence of mucus in urine, 1877, ii., 633.
- Marchand's method of determining the butter in milk, 1879, A., 675.
- estimation of urea by sodium hypobromite, 1879, A., 985; 1880, A., 681.
- Meidinger, Heinrich**, inflammability of coal and a new compressed coal, 1876, i., 135.
- Meier, cultivation of lupins**, 1882, A., 649.
- Meier, Franz**, acids obtained from xylene and phthalic anhydride, 1882, A., 848.
- Meier, Franz**. See also **Emil Ador**, **James Mason Crafts**, **Julius Gresly**.
- Meilly, Franz**, acetic acid, 1873, 875; 1874, 788.
- Meinecke, Fr.**, benzanilide, 1875, 900.
- Meinecke, Chr.**, chloroline compounds in blast furnaces, 1876, i., 452.
- Meise, Chummos** potatoes from Peru, 1881, A., 932.

- Meissl, Emerich**, analysis of butter, 1880, A., 828.  
 — specific rotatory power of lactose, 1881, A., 150.  
 — maltose, 1882, A., 818.  
 — change of milk casein, 1882, A., 1147.
- Meissner, Franz**, polybasic compounds of the acids of nitrogen, 1877, i., 296.
- Meissonnier**, a nickeliferous mineral in Spain, 1876, ii., 612.
- Meister, Lucius**, and **Brüning**, estimation of pure anthracene in crude anthracene, 1877, ii., 228.
- Meister, Otto**, crystallised ferric sulphate, 1876, i., 680.
- Melckebeke, Edm. van**, recognition of the presence of potassium bromide in potassium iodide, 1873, 527.
- Meldola, Raphael**, naphthalene derivatives, 1879, A., 165.  
 — a cause for the appearance of bright lines in the solar spectrum, 1879, A., 571.  
 — action of nitrosodimethylaniline on phenols which do not contain the methyl group, 1880, A., 162.  
 — di- and tri-derivatives of naphthalene, 1880, A., 260.  
 — on a new class of colouring-matters from the phenols, 1880, A., 881; 1881, T., 37.  
 — on nitroso- $\beta$ -naphtholsulphonic acid, 1881, T., 40; A., 436.  
 — contributions to the chemical history of the aromatic derivatives of methane, 1882, T., 187.  
 — action of benzyl chloride on diphenylamine, 1882, A., 502.
- Meldola, Raphael**, and **Donato Tommasi**, note on the action of trichloroacetyl chloride on urea, 1874, 404.
- Meldola, Raphael**, See also **Donato Tommasi**.
- Meldrum, Edward**, obituary notice of, 1876, i., 619.
- Melikoff, Petr G.**, action of hypochlorous acid on acrylic acid, 1880, A., 160.  
 — oxyacrylic (*glycidic*) acid, 1880, A., 626.  
 — constitution of liquid chlorolactic acid and of oxyacrylic (*glycidic*) acid, 1880, A., 800.  
 —  $\beta$ -bromolactic acid, 1880, A., 800.  
 — amidolactic acid, 1880, A., 800.  
 — formation of  $\alpha$ - and  $\beta$ -chlorolactic acids, 1881, A., 154.  
 —  $\beta$ -iodolactic acid, 1881, A., 712.  
 — derivatives of acrylic acid, 1882, A., 38.
- Melikoff, Petr G.** See also **Alexander A. Werigo**.
- Mellias**, detection of coloured red wines, 1876, i., 117.
- Melnikoff, N.** See **Walerius von Hemilian**.
- Melsens, Henri Louis Frédéric**, behaviour of potassium iodate in the animal organism, 1873, 398.  
 — on sulphurous acid and chlorosulphuric acid: combination of chlorine and hydrogen in the absence of light, 1873, 724.  
 — action of low temperatures on wines and spirits, 1873, 1173; 1875, 489.  
 — action of heat on gases and vapour condensed by charcoal, and the behaviour of charcoal with certain liquids, 1874, 120.  
 — on decolorising charcoals and their artificial production, 1874, 1189.
- Mendel, H. J. von**, preparation of food for pigs, 1881, A., 202.
- Mendeléeff, Dmitri I.**, on the atomic weights of cerium, lanthanum, and didymium, 1873, 1004.  
 — an improved mercury air-pump, 1874, 865.  
 — on Siljeström's experiments on the changes of elasticity in rarefied gases, 1875, 231.  
 — on a new sensitive differential thermometer containing mercury, 1875, 727.  
 — remarks suggested by the discovery of gallium, 1876, i., 520.  
 — composition of atmospheric air at different heights, 1876, ii., 181.  
 — origin of mineral oils, 1877, ii., 283.  
 — history of periodic atomicity, 1881, A., 138.  
 — heats of combustion of hydrocarbons, 1882, A., 916.
- Mendeléeff, Dmitri I.**, and **Walerius von Hemilian**, compressibility of gases at pressures less than one atmosphere, 1877, i., 164.
- Mendeléeff, Dmitri I.**, and **Nicholas N. Kajander**, coefficient of expansion of gases, 1877, i., 31.
- Mendeléeff, Dmitri I.**, and **Victor Kirpitschoff**, on the compressibility of air, 1874, 757.
- Mendeléeff, Dmitri I.** See also **Walerius von Hemilian**.
- Mendelsohn, Benno**. See **Ferdinand Cohn**, **Ferdinand Tiemann**.
- Mène, Ch.**, determination of phosphoric acid in manure and fossil phosphates, 1873, 942.

- Mène, Ch.**, methods of analysing natural phosphates, 1873, 1260.  
 — adulteration of beeswax with Japanese wax, 1871, 1026.  
 — analyses of various pieces of beef, veal, mutton, and pork sold in the Paris market in 1873 and 1874, 1874, 1110.
- Mène, Ch.** See also **Beghin**.
- Mengcot, A.**, formation of permanently green crystals of chromic chloride, 1881, A., 352.
- Menke, Albert Edward**, preparation of salts of nitrous oxide, 1878, T., 401.  
 — reactions of iodine and of potassium iodide with sulphurous acid, 1879, A., 352.
- Menke, Albert Edward.** See also *Charles Loring Jackson*, *Charles Romley Alder Wright*.
- Menzio, Angelo.** See *Wilhelm Körner*, *Giovanni Musso*.
- Mensbrugge, Gustave Léonard van der**, reply to Gernez's criticism of van der Mensbrugge and Tomlinson's theory of the action of liquid films, 1873, 721.
- Mensching, Carl**, nitration of salicylanilide, 1880, A., 556.
- Mensching, Carl.** See also *Carl Graebe*.
- Menschutkin, Nicolai A.**, parabanic acid, 1873, 758.  
 — constitution of parabanic acid and synthesis of its homologues, 1874, 466.  
 — salts of parabanic acid, 1874, 889.  
 — potassium oxalurate and the determination of the alkali metals in the salts of ureides, 1874, 890.  
 — dimethylparabanic acid and succidyamic ether, 1876, i., 379.  
 — dialuric acid, 1876, i., 907.  
 — ethylsuccinimide and methylsuccinimide, 1876, ii., 626.  
 — tartronamic acid, 1876, ii., 626; 1877, ii., 323.  
 — composition of dialurates, 1876, ii., 627.  
 — experiments on etherification, 1877, ii., 865; 1882, A., 817.  
 — etherification of secondary alcohols, 1878, A., 127; 1879, A., 211.  
 — etherification of phenols, 1878, A., 574; 1879, A., 215.  
 — etherification of primary alcohols, 1879, A., 36.  
 — etherification of tertiary alcohols and phenols, 1879, A., 215.  
 — etherification of unsaturated monobasic acids, 1880, A., 375.  
 — structure of sorbic and hydro-sorbic acids, 1880, A., 382.
- Menschutkin, Nicolai A.**, influence of isomerism of alcohols on the formation of ethereal salts, 1881, A., 36.  
 — influence of isomerism of monobasic saturated acids on etherification, 1881, A., 39.  
 — influence of isomerism of glycols on the formation of their acetates, 1881, A., 144.  
 — polyhydric alcohols, 1881, A., 146.  
 — influence of isomerism on the etherification of alcohols and acids, 1881, A., 883.  
 — determination of the reaction values of the components of alcohols and acids, 1881, A., 1117.  
 — etherification of polybasic acids, 1882, A., 383.  
 — influence of the molecular weight of homologous bodies on the course of incomplete reactions, 1882, A., 384.  
 — etherification of alcohols and acids of double function, 1882, A., 485.  
 — researches on the determination of the chemical value of the constituents of organic acids, 1882, A., 595.  
 — remarks on the theories of Bergmann and Berthollet, 1882, A., 793.  
 — formation and decomposition of acetanilide, 1882, A., 1084.
- Mercadante, Mariano**, on the supposed transformation of the asparagine of Leguminosae into an albuminoid, 1875, 900.  
 — formation of sugar in fruits, 1875, 904.  
 — influence of tannin on vegetation, 1875, 905.  
 — vegetation of *Orealis Acetosella*, *Rumex Acetosella*, and *R. Acetosella* in a soil free from potash, 1876, i., 96.  
 — effect of albumin on the solubility of tricalcic phosphate in the blood, 1876, i., 280.  
 — the supposed transformation of cellulose into gum in plants, 1876, i., 954.  
 — modification of starch in vegetables, 1877, i., 104.  
 — absence of leucin in the products of germination of the Graminaceae, 1877, i., 105.
- Mercadante, Mariano**, and *E. Colosi*, on the supposed emission of carbonic acid by means of the roots of plants, 1875, 903.
- Mercer, John**, obituary notice of, 1880, T., 260.
- Mercier**, a process of solidification of carbon disulphide, 1877, ii., 419.
- Merck, G.**, hyoseyamine, 1873, 641.

- Merget, A.**, photochemical researches on the use of gases as developers, and on the influence of physical condition on sensitiveness, 1873, 1169; 1874, 1020.
- on the phenomena of gaseous thermo-diffusion in leaves, and on the circulatory movements which result from chlorophyllian respiration, 1874, 380.
- artificial reproduction of the phenomena of gaseous thermo-diffusion of leaves by porous and humid pulverulent bodies, 1874, 579.
- functions of the leaf and stomates in promoting exchange of gases between plants and the atmosphere, 1877, ii., 350, 634.
- Mering, Friedrich Joseph (Freiherr) von**, formation of glycogen in the liver, 1877, i., 728.
- action of diastatic ferments on starch, dextrin, and maltose, 1882, A., 749.
- reduction processes in the animal body, 1882, A., 952.
- Mering, Friedrich Joseph (Freiherr) von**, and **Nathan Zuntz**, influence of food in oxidation, 1878, A., 520.
- Mering, Friedrich Joseph (Freiherr) von**. See also **Eugen Baumann, Friedrich Musculus**.
- Merklen, L.**, remarks on the testing of milk, 1874, 1017.
- Merling, Georg**, lithium phosphates, 1880, A., 581.
- addition products of atropic acid, 1881, A., 1143.
- tropine, 1882, A., 216, 739.
- Merling, Georg**. See also **Karl Kraut**.
- Mermet, Achille Ernest**, some double metallic sulphocarbonates, 1876, i., 63.
- on a delicate test for sulphocarbonates of the monosulphides (MS.CS<sub>2</sub>) in solution, 1876, i., 744.
- Mermet, Achille Ernest**. See also **Bénédict Delachanal**.
- Merrick, John M.**, electro-magnetic deposition of nickel, 1873, 204.
- action of oil of turpentine and acetic acid on lead and tin, 1874, 1065, 1188.
- determination of very small amounts of copper, 1876, i., 962.
- chloride of cobalt-ammonium, 1877, ii., 709, 846.
- Merrill, N. Frederic**, preparation of dimethylaniline from trimethylphenyl-ammonium iodide, 1878, A., 787.
- Mertens, Karel Hendrik**, estimation of sugar, 1873, 1059.
- Mertens, Karel Hendrik**, nitro-compounds of dimethylaniline, 1877, ii., 605.
- compounds of picramide, 1878, A., 725.
- Mertens, Otto**, some cyanides of acid radicles, 1878, A., 396.
- Merz, Gustav**, testing of fatty oils, 1877, ii., 228.
- testing of olive oil, 1877, ii., 228.
- volumetric estimation of aluminium sulphate and of alums, 1877, ii., 355.
- Merz, Victor**, and **Ezweiler**, researches on perbromination, 1879, A., 702.
- Merz, Victor**, and **Emil Gessner**, action of bromine on aromatic substances, 1876, ii., 511.
- Merz, Victor**, and **Georg Ruoff**, action of chlorine on aromatic substances, 1876, ii., 511; 1877, i., 706.
- Merz, Victor**, and **Karl Schelnberger**, reactions of typical halogenated hydrocarbons, 1876, i., 211.
- aromatic nitriles, 1876, i., 600.
- Merz, Victor**, and **J. Tibiriça**, synthetical formation of formic acid, 1878, A., 288; 1880, A., 374.
- Merz, Victor**, and **E. Wall**, action of heat on brominated hydrocarbons, 1876, ii., 503.
- Merz, Victor**, and **Wilhelm Weith**, action of bromobenzoic acid on aniline, 1873, 73.
- diphenylamine, 1873, 74; 1874, 375.
- lecture experiments, 1874, 334; 1881, A., 18.
- action of heat on sodium ethylate, 1874, 348.
- triphenylamine, 1874, 376.
- preparation of aromatic nitriles, 1877, ii., 602.
- derivatives of dimethylaniline, 1877, ii., 603.
- benzyl- and dibenzyl-acetic acids, 1877, ii., 617.
- brominated derivatives of hexane, 1877, ii., 867.
- carbodiphenylimide and phenyl-*p*-tolylcarbimide, 1877, ii., 886.
- reactions of dimethylaniline, 1877, ii., 886.
- naphthalene derivatives, 1877, ii., 898.
- haloid derivatives of anthracene and phenanthrene, 1878, A., 75.
- action of bromine on the lower paraffins, 1879, A., 302.
- action of bromine on the higher paraffins, 1879, A., 302.



- Merz, Victor**, and **Wilhelm Weith**, substitution in the phenyl group, 1880, A., 813.  
 ——— etherification of phenols, 1881, A., 261.  
 ——— mononaphthylamines from naphthols, 1881, A., 605.  
 ——— amalgams, 1881, A., 881.  
 ——— preparation of amines from phenols and alcohols, 1882, A., 179.  
 ——— synthesis of oxalic acid, 1882, A., 1049.
- Merz, Victor**, and **Georg Zetter**, preparation of trinitroresorcinol and trinitro-oreinol, 1879, A., 717.  
 ——— resorcinol and oreinol derivatives, 1880, A., 113.
- Merz, Victor**, **Georg Zetter**, **Georg Ruoff**, and **Friedrich E. G. Moč**, researches on perchlorination, 1879, A., 721.
- Merz, Victor**. See also **Theodor Diehl**, **Robert Ebert**, **S. Grucarevič**, **Michael Kollarits**, **Friedrich Krafft**.
- Meschtschersky, Ivan**, separation of barium from strontium and calcium in the form of chromate, 1882, A., 997.
- Messel, Rudolph**, estimation of chlorine in presence of sulphurous acid, 1871, 287.
- Messerschmidt, Alfred**. See **Rudolph Fittig**.
- Metcalf, William**, influence of heat on the structure of steel, 1878, A., 1019.
- Metz, A.**, the crystalline precipitate produced in beer on the addition of potassium carbonate, 1873, 658.
- Meulen, B. van der**, a new copper nitrite, 1879, A., 693.
- Meulen, Hendrik Gjalts Landmeter van der**. See **Edward Mulder**.
- Meunier, Etienne Stanislas**, characters of the crust produced upon terrestrial rocks by atmospheric agency, compared with the black coating of certain meteorites, 1873, 141.  
 ——— lithological analysis of the meteorite from the Sierra de Chaco: mode of formation of logronite, 1873, 358.  
 ——— product of oxidation of meteoric iron: comparison with terrestrial magnetites, 1874, 35.  
 ——— troilite, 1874, 663.  
 ——— experiments and observations on vitreous rocks, 1877, i., 57, 448, 488.  
 ——— composition and origin of the diamond-bearing sand from Du Toit's Pan, South Africa, 1877, ii., 280.  
 ——— experimental researches on natural sulphides, 1877, ii., 708.  
 ——— artificial formation of brochantite, 1878, A., 476.
- Meunier, Etienne Stanislas**, formation of the meteoric breccia from St. Catherine, Brazil, 1878, A., 713.  
 ——— artificial crystallisation of orthose, 1879, A., 359.  
 ——— metallic granules of sporadosideral meteorites, 1879, A., 609.  
 ——— artificial production of native carburetted iron, 1879, A., 693.  
 ——— artificial production of spinel and corundum, 1880, A., 447.  
 ——— a source of atmospheric carbonic anhydride, 1881, A., 72.  
 ——— synthetic production of native silicates of alumina and alkaline silico-aluminates, 1881, A., 350.  
 ——— lithological and geological examination of a meteorite which fell 15th October, 1872, near Soko-Banja, Servia, 1881, A., 1017.  
 ——— synthetic imitation of meteoric nickel iron, 1881, A., 1018.  
 ——— artificial production of peridot in presence of steam at the ordinary atmospheric pressure, 1882, A., 286.
- Meunier, Etienne Stanislas**. See also **Albert Levallois**.
- Meunier, Fernand**, distribution of sugar in sorghum, 1881, A., 60.  
 ——— composition of wheat ashes, 1881, A., 75f.  
 ——— asparagine, 1881, A., 761.
- Meunier-Dollfus, Charles**. See **Auguste Scheurer-Kestner**.
- Meusel, Edward**, formation of nitrites by bacteria, 1876, i., 189.  
 ——— on putrefaction induced by bacteria in presence of alkaline nitrates, 1876, i., 413.
- Meyer**. See **Johann Ludwig Späth**.
- Meyer, Arthur**, absorption spectra of solutions of brucine, morphine, strychnine, veratrine, and santonine in concentrated acids, 1879, A., 269.  
 ——— structure of starch grains, 1882, A., 1122.
- Meyer, Arthur**. See also **Pierre Paul Dehérain**, **Friedrich Musculus**.
- Meyer, Carl**. See **Victor Meyer**, **Wilhelm Michler**.
- Meyer, Carl Ferd.**, contribution to the knowledge of reduced phosphoric acid, 1880, A., 574.  
 ——— retrogradation of superphosphates containing iron and aluminium, 1880, A., 703.
- Meyer, Chr. G.** See **Julius Post**.
- Meyer, Ernst Sigismund Christian von**, on the gases evolved from the springs at Inselbad (Paderborn) and their application to inhalation, 1873, 360, 1212.



- Meyer, Ernst Sigismund Christian von**, gases enclosed in coal, 1873, 483.  
 — new method of forming acrolein from ethylene, 1875, 348.  
 — on the affinities developed during slow oxidation of hydrogen and carbonic oxide by platinum, 1876, ii., 40.  
 — catalytic action of platinum, 1876, ii., 486.  
 — constitution and properties of oxidised platinum sulphide, 1877, ii., 114.  
 — osmium oxysulphides, 1878, A., 14.  
 — some new platinum compounds: fulminoplatinums, 1879, A., 373.  
 — cyanethine and new bases derived from it, 1880, A., 31; 1881, A., 54.  
**Meyer, Ernst Sigismund Christian von, and Adolf Wilhelm Hermann Kolbe**, experiments on the arrest of fermentation by salicylic acid and other aromatic acids, 1876, i., 101.  
 — the antiseptic actions of salicylic and benzoic acids on beer worts and urine, 1876, i., 959.  
**Meyer, Ferdinand**, preparation of large regular crystals, 1879, A., 352.  
**Meyer, Ferdinand Moritz**. See *Karl Kraut*.  
**Meyer, Fr.**, mode of action of animal charcoal, 1874, 1025.  
**Meyer, G. F.**, sugar manufacture without the use of animal charcoal, 1882, A., 905.  
**Meyer, G. F.** See also *A. Reinecke*.  
**Meyer, Georg**, action of carbonic anhydride on certain cyanides, 1879, A., 303.  
**Meyer, Georg**. See also *Albert Ladenburg*.  
**Meyer, H.**, manure experiments with rye, wheat, and oats, 1880, A., 738.  
 — bone-meal as a manure for potatoes, 1880, A., 739.  
**Meyer, Hans Horst, and Max Jaffé**, origin of uric acid in the organism of birds, 1878, A., 443, 595.  
**Meyer, Hans Horst**. See also *Erich Harnack*.  
**Meyer, Julius Lothar**, description of a pressure regulator, 1873, 319.  
 — on the systemization of inorganic chemistry, 1873, 591.  
 — the atomic weight of molybdenum, 1874, 132.  
 — lecture experiment to illustrate vaporisation without fusion, 1876, i., 516.  
 — incomplete combustion, 1878, A., 262.  
**Meyer, Julius Lothar**, transpiration of vapours, 1878, A., 368.  
 — atomic weight of glucinum, 1878, A., 557; 1881, A., 139.  
 — purification of mercury, 1879, A., 602.  
 — history of periodic atomicity, 1880, A., 605; 1881, A., 138.  
 — Victor Meyer's vapour density determinations, 1880, A., 824.  
 — evaporation without fusion, 1881, A., 133, 678.  
**Meyer, Julius Lothar, and Otto Schumann**, transpiration of vapours, 1881, A., 504.  
**Meyer, Oskar Emil**, on the internal friction of gases: influence of temperature on the friction, 1873, 838.  
**Meyer, Oskar Emil, and Ferdinand Springmühl**, transpiration of gases, 1873, 468.  
**Meyer, Otto**, twin zircon crystals, 1879, A., 363.  
 — the rock of the St. Gothard tunnel, 1879, A., 366.  
**Meyer, Paul J.**, action of ammonia and aniline on monochloroacetic acid and its derivatives, 1876, i., 372.  
 — tolylglycocine and its derivatives, 1876, i., 401.  
 — action of heat on glycocines, 1878, A., 294.  
 — substituted thiohydantoins, 1878, A., 295.  
 — ethyl mono- and di-chlorothioacetates: action of phosphorus pentasulphide on chlorinated acetic acids, 1881, A., 890.  
 — a new phenylthiohydantoic acid, 1881, A., 1039.  
 — formation of substituted imidodiglycollic acids in the preparation of *p*-tolyl- and phenyl-glycines, 1882, A., 518.  
**Meyer, Richard E.**, formation of ketonic acids, 1873, 496.  
 — formation of aniline-black, 1876, i., 936.  
 — behaviour of cuminol with potash, 1877, ii., 333.  
 — soluble glass, 1878, A., 534.  
 — oxidation of cumic acid with potassium permanganate, 1878, A., 878.  
 — the mineral spring of "Temiger Bad," Sonvixer Tobel, Grisons, 1879, A., 33.  
 — hydroxylation by direct oxidation, 1879, A., 139.  
 — derivatives of hydroxypropylbenzoic acid, 1879, A., 795.

- Meyer, Richard E.**, behaviour of hamatoxylin on destructive distillation, 1880, A., 248.
- preparation of benzyl alcohol, 1882, A., 170.
- tetrabromobenzene (m.p. 175°), 1882, A., 606.
- Meyer, Richard E.**, and **Albert Baur**, hydroxylation by direct oxidation, 1880, A., 165; 1881, A., 15.
- Meyer, Richard E.**, and **Heinrich Boner**, oxidation of isocymenesulphonic acid, 1881, A., 818.
- hydroxylation by direct oxidation, 1882, A., 195.
- Meyer, Richard E.**, and **Erwin Müller**, synthesis of *p*-propylbenzoic acid, 1882, A., 840.
- constitution of cumic acid, 1882, A., 971.
- Meyer, Richard E.**, and **Johann Rosicki**, hydroxypropylbenzoic acid, 1879, A., 151, 465.
- Meyer, Rudolf.** See **Siegmund Gabriel**.
- Meyer, Victor**, nitro-compounds of the fatty series; nitrolic acids, 1874, 365; 1875, 557.
- action of sodium formate on sulphobenzoic and benzoic acids, 1871, 478.
- constitution of the compounds of the benzoic series, 1871, 479.
- ethylnitrolic acid, 1874, 677.
- dibromonitroethane, 1875, 215.
- formation of terephthalic acid from the two sulphonic acids which yield resorcin, 1875, 259.
- hydroxylamine, 1875, 566.
- remarks on Genther's paper on the nitroethanes, 1875, 632.
- isomeric dibromobenzenes, 1875, 758.
- danger of preparing nitroform, 1875, 1256.
- nitrobenzenesulphonic acid, 1876, i., 586.
- solubility determinations, 1876, i., 676.
- on the quantivalence and combining capacity of carbon, 1876, i., 892.
- mixed azo-compounds, 1876, ii., 93.
- dinitrobutane, 1876, ii., 288.
- determination of vapour density, 1877, i., 34; 1878, A., 263; 1879, A., 177.
- lecture experiment to show the increase of weight on burning a taper, 1877, i., 437.
- ammonium compounds, 1877, ii., 190.
- Meyer, Victor**, triethylbenzylammonium iodide, 1877, ii., 606.
- triethylamine derivatives, 1877, ii., 877.
- remarks on the conversion of chloral into dichloroacetic acid, 1878, A., 133.
- introduction of nitrogenous radicals into members of the fatty group, 1878, A., 396.
- occurrence of furaldehyde in glacial acetic acid, 1879, A., 137.
- observations on vapour densities, 1880, A., 433.
- vapour density of iodine, 1880, A., 433, 696, 788.
- vapour densities of the alkali metals, 1880, A., 434.
- calorimetric temperature determinations, 1880, A., 431.
- determination of the densities of permanent gases, 1881, A., 137.
- vapour density of chlorine, 1881, A., 219.
- vapour density of the halogens, 1881, A., 872.
- lecture experiments, 1882, A., 689.
- nitroso-compounds and ketines, 1882, A., 910.
- Meyer, Victor**, and **Gottwalt Ambühl**, a new class of azo-compounds, 1875, 1202.
- mixed azo-compounds, 1876, i., 84.
- Meyer, Victor**, and **Emil Joseph Constam**, ethylazaurolic acid (*nitrosoazothane*), 1881, A., 895.
- Meyer, Victor**, and **L. Dulk**, action of glacial acetic acid on chloral, 1873, 878.
- compounds of chloral, 1874, 460.
- Meyer, Victor**, and **Friedrich Forster**, researches on transpositions of atoms, 1876, ii., 182.
- Meyer, Victor**, and **Heinrich Goldschmidt**, estimation of gas densities, 1882, A., 771.
- estimation of the specific gravity of permanent gases at high temperatures, 1882, A., 1159.
- Meyer, Victor**, and **H. Haffter**, volumetric estimation of chloral, 1873, 1163.
- Meyer, Victor**, and **Alois Janny**, action of hydroxylamine on acetone, 1882, A., 1047.
- a new method of preparing  $\alpha$ -nitrosopropionic acid and the mode of action of hydroxylamine, 1882, A., 1047.
- nitrogenous acetone derivatives, 1882, A., 1184.

- Meyer, Victor, and Marco T. Lecco**, the constitution of ammonium compounds, 1875, 633; 1876, i., 381.
- on the constitution of sal-ammoniac, 1875, 999.
- synthesis of propylnitrolic acid, 1876, ii., 71.
- Meyer, Victor, and Johannes Locher**, researches on the constitution of the nitrolic acids, 1874, 982.
- $\psi$ -nitrolics, the isomerides of the nitrolic acids, 1874, 983; 1875, 445, 1182; 1876, i., 904.
- new method of preparing ethylnitrolic acid, 1875, 57.
- some new reactions by which hydroxylamine is obtained, 1875, 633.
- action of acids on aromatic nitro-compounds, 1875, 640.
- diagnosis of primary, secondary, and tertiary alcohols and alcohol radicles by means of colour reactions, 1875, 1170.
- action of acids on nitrated fatty bodies, 1876, i., 903.
- action of tin and hydrochloric acid on ethylnitrolic acid and on nitroform, 1876, i., 904.
- Meyer, Victor, and Carl Meyer**, determination of vapour densities of substances which attack mercury, or which boil above  $440^{\circ}$ , 1879, A., 294.
- vapour densities of some inorganic compounds, 1879, A., 579, 875, 1013.
- vapour density determinations of inorganic bodies at high temperatures, 1879, A., 766.
- behaviour of chlorine at high temperatures, 1880, A., 211.
- Meyer, Victor, and Wilhelm Michler**, preliminary notice on the action of sodium amalgam on dinitrobenzoic acid, 1873, 1141.
- the dicarbonic acids from benzenedisulphonic acid, 1875, 1026.
- Meyer, Victor, and Camille Petri**, ethylterpene, 1877, ii., 626.
- Meyer, Victor, and Albert A. Rilliet**, nitro-compounds of the fatty series, 1873, 261.
- Meyer, Victor, and Fr. V. Spitzer**, researches on the turpentine oils and camphors, 1876, ii., 514.
- Meyer, Victor, and Otto Stüber**, the aromatic amines, 1873, 507.
- Meyer, Victor, and Joseph Tcherniac**, substitution in the nitro-compounds of the fatty group, 1871, 982.
- bromo-derivatives of the nitropropanes, 1876, i., 901.
- Meyer, Victor, and Frederick Pearson Treadwell**, ketines, 1881, A., 796.
- Meyer, Victor, and Casimir Wurster**, nitro-compounds of the fatty series, 1873, 611; 1874, 146.
- ethyl sulphocyanate, 1873, 1224.
- synthesis of diphenylmethane, 1873, 1225.
- Meyer, Victor, and Heinrich Züblin**, determination of the density of vapours which attack porcelain at a red heat, 1880, A., 149.
- behaviour of chlorine at high temperatures, 1880, A., 432.
- density of bromine at high temperatures, 1880, A., 432.
- platonic bromide, 1880, A., 445.
- volatile metallic chlorides, 1880, A., 604.
- Meyer, Victor, and Jules Züblin**, nitroso-compounds of the fatty series, 1878, A., 487, 659.
- Meyer, Victor, Johann Barbieri, and Friedrich Forster**, on molecular transformation, 1877, ii., 285.
- Meyer, Victor**. See also **Heinrich Goldschmidt**.
- Meyeringh, Willem**, new double salts of hydroxylamine, 1878, A., 113.
- volumetric methods for the estimation of hydroxylamine, 1878, A., 335.
- Michael, Arthur**, action of potassium sulphhydrate on chloral hydrate, 1877, i., 188.
- preparation of *p*-amidobenzoic acid, 1877, ii., 615.
- action of bromine on ethylphthalimide, 1878, A., 70.
- synthesis of phenolglucoside and *o*-formylglucoside or helicin, 1879, A., 1038.
- action of aromatic hydroxy acids on phenols, 1881, A., 592.
- preparation of formic aldehyde, 1881, A., 1123.
- a new formation of ethylthiocarbimide, 1881, A., 1128.
- ethylphthalic acid, 1881, A., 1147.
- a new formation of stilbene and some of its derivatives, 1881, A., 1150.
- synthesis of methylarbutin, 1882, A., 174.
- paraconine, 1882, A., 215.
- Michael, Arthur, and A. Adair**, aromatic sulphones, 1877, ii., 612; 1878, A., 415.
- Michael, Arthur, and Charles Gundelach**, synthesis of methyleonine and constitution of conine, 1881, A., 825.

- Michael, Arthur, and Lewis Mills Norton**, action of iodine chloride on aromatic amines, 1878, A., 406.
- monobromocrotonic acids, 1881, A., 798.
- Michael, Arthur, and Thomas Herbert Norton**, triiodoresorcin, 1877, i., 463.
- diamidosulphobenzidedicarboxylic acid, 1877, ii., 619.
- Michael, Arthur**. See also *Siegmund Gabriel*.
- Michaelis, Carl Arnold August**, on Barbaglia and Kekulé's explanation of the action of phosphoric chloride on sulphochlorides, 1873, 131.
- researches on supersaturation, 1873, 470.
- aromatic phosphorus compounds, 1873, 1148; 1874, 168, 485.
- chlorides and oxychlorides of sulphur, 1874, 225.
- the constitution of phosphorous acid, 1875, 1160.
- a phosphorus compound analogous to diazobenzene, 1875, 1203.
- aromatic arsenic compounds, 1876, i., 610; 1877, i., 311; ii., 452.
- phosphodiphenyl chloride and its derivatives, 1877, ii., 453.
- a homologue of phosphenylchloride, 1879, A., 721.
- ethylphosphodichloride and its homologues, 1881, A., 158.
- tolyl methyl ketone, 1882, A., 970.
- Michaelis, Carl Arnold August, and J. Ananoff**, aromatic phosphorus compounds, 1875, 467.
- Michaelis, Carl Arnold August, and Paul Becker**, monophenylboric chloride and some of its derivatives: the quantivalence of boron, 1880, A., 395; 1882, A., 731.
- attempts to prepare boron oxytrichloride, 1881, A., 682.
- Michaelis, Carl Arnold August, and Edward Benzinger**, some derivatives of phosphenylic acid, 1876, i., 598.
- amido- and diazo-phosphenylic acids, 1876, ii., 203.
- action of soda-lime on phosphenylic and nitrophosphenylic acids, 1876, ii., 204.
- compounds of elements of the nitrogen series with aromatic organic radicles, 1878, A., 57.
- Michaelis, Carl Arnold August, and Fritz Dittler**, reactions of phenylphosphine, 1879, A., 528.
- Michaelis, Carl Arnold August, and Ludwig Gleichmann**, di- and triphenylphosphines, 1882, A., 1062.
- Michaelis, Carl Arnold August, and Friedrich Graeff**, aromatic phosphorus compounds, 1876, i., 274.
- diphenylphosphoric acid, 1876, i., 596.
- Michaelis, Carl Arnold August, and F. Kammerer**, phosphenyl tetrachloride and the phenol ethers of phosphenylic acid, 1876, i., 597.
- Michaelis, Carl Arnold August, and Hugo Köhler**, phosphenyl bromide and derivatives, 1876, ii., 420.
- phosphenyl sulphochloride and some of its derivatives, 1876, ii., 525.
- Michaelis, Carl Arnold August, and G. Koethe**, action of sodium sulphite and of sulphurous acid on lead iodide, 1874, 26.
- Michaelis, Carl Arnold August, and B. Landmann**, constitution of selenious acid, 1880, A., 607.
- Michaelis, Carl Arnold August, and H. Lange**, on the action of phosphorus trichloride on toluene, and on trichlorotolylphosphoric acid, 1876, i., 392.
- Michaelis, Carl Arnold August, and A. Link**, constitution of the arsonium and phosphonium compounds, 1882, A., 305.
- Michaelis, Carl Arnold August, and C. Mathias**, sulphur oxytetrachloride, 1874, 226.
- aromatic phosphorus compounds: phosphenylic acid and its derivatives, 1875, 170.
- Michaelis, Carl Arnold August, and Ch. Panek**, homologues of phosphenyl chloride, 1880, A., 610; 1882, A., 958.
- benzophosphinic acid, 1881, A., 603.
- Michaelis, Carl Arnold August, and August Reese**, preparation of triphenylphosphine, 1882, A., 1287.
- Michaelis, Carl Arnold August, and O. Schifferdecker**, existence and decomposition by heat (dissociation) of sulphur tetrachloride, 1873, 132; 1874, 20.
- sulphur oxytetrachloride, 1874, 21.
- Michaelis, Carl Arnold August, and Carl Schulte**, arsenobenzene, 1881, A., 722.
- Michaelis, Carl Arnold August, and Otto Schumann**, constitution of the lead-chamber crystals, 1875, 43.



- Michaelis, Carl Arnold August**, and **Georg Wagner**, on the constitution of ethyl sulphite, 1875, 139.
- Michaelis, Carl Arnold August**. See also **H. Götter**, **Hugo Köhler**, **Wilhelm La Coste**.
- Michaelis, Hugo**, automatic gas extinguisher, 1882, A., 1243.
- Michaelis, W.**, valuation of cements, 1877, ii., 801.
- Michel, Karl**, and **Jäckel-Handwerk**, steeping of barley, 1882, A., 1224.
- Michel-Lévy, Auguste**, on the microscopic character of the old acid rocks with regard to the age of their volcanic formation, 1876, i., 197.
- origin of crystalline rocks, 1877, i., 57.
- structure and mineralogical composition of variolite from Durance, 1877, ii., 412.
- sillimanite in the gneiss of the Morvan, 1881, A., 1005.
- sphenulites in eruptive rocks, 1882, A., 705.
- polycrystalline nuclei of black mica, 1882, A., 811.
- Michel-Lévy, Auguste**, and **Léon Bourgeois**, dimorphism of stannic acid, 1882, A., 1030.
- Michel-Lévy, Auguste**. See also **F. Fouqué**.
- Michler, Wilhelm**, contributions to a knowledge of the azo-compounds, 1874, 695; 1875, 644.
- thio-ethers, 1875, 258, 761.
- substituted ureas, 1876, i., 702; ii., 91, 290.
- synthesis of organic acids by means of carbon oxychloride, 1876, ii., 68.
- constitution of cyanic acid, 1876, ii., 288.
- synthesis of aromatic ketones by means of carbonyl chloride, 1876, ii., 298.
- action of aromatic sulphonic chlorides on dimethylaniline, 1878, A., 140.
- Michler, Wilhelm**, and **Gottlieb Blatter**, nitration of benzenesulphanilide, 1879, A., 922.
- Michler, Wilhelm**, and **Ch. Dupertuis**, synthesis of ketones from dimethylaniline, 1877, ii., 333.
- Michler, Wilhelm**, and **C. Escherich**, polysubstituted carbamides, 1879, A., 934.
- Michler, Wilhelm**, and **Arnold Gradmann**, synthesis of organic acids and ketones by means of chloroacetic acid, 1877, ii., 334.
- Michler, Wilhelm**, and **Arnold Gradmann**, derivatives of dimethylaniline, 1878, A., 299.
- Michler, Wilhelm**, and **Ulrich Hannhart**, dimethylamidophenylglyoxalic acid, 1878, A., 421.
- Michler, Wilhelm**, and **Edward Keller**, polysubstituted carbamides, 1882, A., 182.
- Michler, Wilhelm**, and **Carl Meyer**, action of sulphonic chlorides on amines, 1880, A., 108.
- Michler, Wilhelm**, and **Giuseppe Moro**, action of sulphonyl chlorides on amines, 1879, A., 920.
- Michler, Wilhelm**, and **Hugh Salvin Pattinson**, substituted derivatives of benzidine and diamidoditolyl, 1882, A., 199.
- Michler, Wilhelm**, and **Fritz Salathé**, action of sulphonic chlorides on amines, 1880, A., 108.
- Michler, Wilhelm**, and **Antonio José de Sampaio**, diamidoditolyl compounds, 1882, A., 177.
- Michler, Wilhelm**, and **Alfred Sarauw**, methylphenylamidobenzoic acid, 1882, A., 183.
- Michler, Wilhelm**, and **Hans Jakob Walder**, reactions of dimethylaniline, 1882, A., 175.
- preparation of carbatriphenylamine, 1882, A., 180.
- Michler, Wilhelm**, and **A. Zimmermann**, polysubstituted carbamides, 1882, A., 182.
- Michler, Wilhelm**, and **Robert Zimmermann**, polysubstituted carbamides, 1879, A., 935.
- Michler, Wilhelm**. See also **Victor Meyer**.
- Middleton, James**, obituary notice of, 1876, i., 619.
- Miehle, Gustav**, synthesis of tricarballylic acid, 1878, A., 490.
- Mielck, J. Bertram**, constitution of terebic and pyroterebic acids, 1876, i., 923.
- Mielck, J. Bertram**. See also **Rudolph Fittig**.
- Mielck, Wilhelm Hildemar**. See **Rudolph Fittig**.
- Mierzinski, Stanislaus**, preparation of black chalk, 1882, A., 248.
- Miescher, Johann Friedrich**, protamine, a new organic base from the roe of the Rhine salmon, 1874, 794.
- Mihet**, bacteria in the atmosphere, 1880, A., 727.
- Mignon and Rouart**, process for cooling large quantities of air by contact with a cooled liquid, 1876, i., 335.



- Mignon and Rouart**, results obtained with new apparatus for extracting juice from sugar cane, 1876, ii., 680.
- note on a manometric apparatus, with reference to a recent paper of Cailletet, 1877, i., 437.
- Mikosch, Karl**, origin of chlorophyll corpuscles, 1879, A., 174.
- Millardet, Alexis**, observations on a recent communication of Chautard on the absorption bands of chlorophyll, 1873, 996.
- Millardet, Alexis**. See also *Ulysse Gayon*.
- Miller, Alexander Kenneth**, on dihydroxybenzoic acids and iodosalicylic acids, 1882, T., 398.
- Miller, Heinrich von**, malonic acid, 1879, A., 917.
- Miller, J. B.**, new method of painting on glass, 1882, A., 127.
- method of printing and burning-in of names, monograms, etc., on glass and porcelain, 1882, A., 785.
- Miller, Norman Harry John**. See *Francis Robert Japp*.
- Miller, Oswald**, an isomide of dibromanthracene, 1877, i., 86.
- isomeric nitrophthalic acids, 1878, A., 504.
- neutral ethyl salt of nitrophthalic and Baeyer's oxyphthalic acids, 1878, A., 982.
- products of the dry distillation of calcium phthalate, 1880, A., 255.
- naphthaquinone, 1881, A., 1041.
- some derivatives of phthalic acid, 1882, A., 404.
- Miller, Wilhelm von**, chemical compounds contained in liquid storax, 1876, i., 612, 939; 1878, A., 159.
- methylecrotonic acid, 1878, A., 292.
- a new substitute for litmus in titration, 1878, A., 527.
- cinnamene, 1878, A., 885.
- angelic acids of different origin, 1879, A., 45.
- dimethylacrylic acid, 1879, A., 307.
- hydroxyethylmethylacetic acid, 1880, A., 34.
- hydroxyisobutylformic acid, 1880, A., 35.
- hydroxyvaleric acids and angelic acids, 1880, A., 314.
- a new colouring matter, 1880, A., 559.
- supplementary notice on new colouring matters, 1880, A., 610.
- rouge français, 1880, A., 664.
- Biebrich-scarlet, 1880, A., 813.
- Miller, Wilhelm von**. See also *Oscar Gustav Doebner*, *August Wilhelm von Hofmann*.
- Miller, William Hallwachs**, obituary notice of, 1881, T., 188.
- Millet, A.** See *Jacques Curie*.
- Millot, A.**, researches on soluble phosphates for use in agriculture, 1874, 913.
- phosphates of iron and aluminium, 1875, 735; 1876, i., 880.
- manufacture of superphosphates for agricultural purposes, 1876, ii., 122.
- dicalcium phosphate, 1877, i., 689; 1880, A., 442.
- insoluble phosphoric acid in superphosphate, 1879, A., 1052.
- synthesis of ulmic substances, 1880, A., 482.
- retrograde phosphoric acid, 1881, A., 62.
- Millot, A.**, and **Léon Maquenne**, ammonio-magnesium phosphate, 1875, 1160.
- volumetric estimation of arsenic, 1878, A., 915.
- fermentations produced in preparing syrups from beet juice by diffusion, 1880, A., 519, 931.
- Mills, Edmund James**, researches on elective attraction, 1873, 342.
- on Gladstone's experiments relating to chemical mass, 1875, 34.
- aniline derivatives, 1875, 647.
- nitrotoluenes, 1876, i., 393.
- on potable waters, Part I., 1878, T., 57.
- researches in thermometry, 1879, A., 588.
- on the lecture illustration of chemical curves, 1880, T., 453.
- chemical repulsion, 1880, A., 693; 1881, A., 971.
- on potable waters, Part II., determination of total solids, 1881, T., 385.
- melting points, 1882, A., 567.
- Mills, Edmund James**, and **Richard Lilburn Barr**, on the precipitation of the alums by sodic carbonate, 1882, T., 341.
- Mills, Edmund James**, and **John Hughes Bicket**, researches on chemical equivalence. Part I., Manganous and nickelous sulphates, 1882, A., 689.
- Mills, Edmund James**, and **Louis Campbell**, researches in dyeing. Part II., Note on the emission of colouring matter, 1879, T., 290.

- Mills, Edmund James, and George Donald**, on the action of oxides on salts. Part IV., Potassic chlorate and ferric oxide, 1882, T., 18.
- Mills, Edmund James, and James Hogarth**, researches on chemical equivalence. Part II., Hydrogen chloride and sulphate, 1880, A., 438.
- researches on lactic acid, 1880, A., 458.
- Mills, Edmund James, and Bertram Hunt**, researches on chemical equivalence. Part II., Nickel and cadmium sulphates, 1882, A., 689.
- Mills, Edmund James, and Charles Wright Meanwell**, on the action of oxides on salts, Part III., 1881, T., 533.
- Mills, Edmund James, and James Bell Pettigrew**, on the steeping of barley, 1882, T., 38.
- Mills, Edmund James, and John Waller Pratt**, on the action of oxides on salts, Part II., 1879, T., 336.
- Mills, Edmund James, and James Johnstone Smith**, researches in chemical equivalence, Part III., 1879, A., 876.
- Mills, Edmund James, and George Thomson**, researches in dyeing. Part I., Silk and rosaniline, 1879, T., 26.
- Mills, Edmund James, and Thomas Ulrick Walton**, researches on chemical equivalence. Part I., Sodium and potassium sulphates, 1880, A., 137.
- Mills, Edmund James, and David Wilson**, action of oxides on salts, Part I., 1878, T., 360.
- Milne, James M.**, note on the analysis of sugar, 1875, 101.
- Mingioli, Eustachio**, wax and buttery substance from the epicarp of the olive, 1882, A., 765.
- Miquel, Pierre**, sulphocyanates of acid radiates, 1876, i., 570.
- new method of preparing thionreas, 1876, ii., 73.
- benzylnaphthalene, 1876, ii., 407.
- stains produced by thiocyanic acid, 1877, i., 457.
- silicon thiocyanate, 1877, i., 705.
- action of alcohols of the fatty series upon benzoylsulphocarbimide, 1877, i., 709.
- new compounds of thiocyanic acid, 1877, ii., 869.
- presence of urea ferment in the air, 1878, A., 680.
- presence of an alcoholic ferment in the air, 1879, A., 394.
- the succinic fermentation, 1879, A., 394.
- Miquel, Pierre**, a new organised ferment, 1879, A., 817.
- fermentation accompanied by formation of hydrogen sulphide, 1880, A., 132.
- *Bacillus ureæ*, 1880, A., 133.
- atmospheric bacteria, 1880, A., 727.
- Miquel, Pierre, and Lucien Benoist**, sterilisation of animal and vegetable liquids, 1881, A., 835.
- Miron, and L. Bruneau**, artificial production of calcite and witherite, 1882, A., 1270.
- Misani, D.** See *Fausto Sestini*.
- Misiagiewicz, L.**, purification of juice in the manufacture of sugar, 1875, 490.
- Missaghi, G.**, a filter for separating crystals from extractive matter, 1876, i., 876.
- persistence of the germinating power in seeds, 1876, i., 955.
- self-preservation of grapes in spirit, 1876, i., 957.
- the emission of hydrogen during the vegetation of mildew, 1876, i., 958.
- on Barreswill's, Fehling's, Trommer's, etc. tests for estimating glucose, 1876, i., 965.
- Mitchell, Charles L.**, gun-cotton and collodion preparations, 1873, 540.
- jervine, 1874, 590.
- the active principles of the officinal Veratrum, 1875, 1267.
- Mitchell, Howard W.**, note on litmus, 1877, i., 214.
- Mitscherlich, Alexander**, direct estimation of the constituents of carbon compounds by one combustion, 1874, 93.
- an air thermometer, 1876, ii., 168.
- the point of combustion, 1877, i., 42.
- on new phenomena shown by gases, 1879, A., 587.
- Mitschke-Collande, F. von**, relation of wool to body weight in merino sheep, 1881, A., 1054.
- Mittenzwey, Otto.** See *Rudolf Wilhelm Schmitt*.
- Mixer, William Gilbert**, derivatives of ethylene sodium acetate, 1874, 784.
- amyliidenamine silver nitrate, 1878, A., 564.
- ethyliidenamine silver sulphate, 1880, A., 234.
- compounds of the aromatic amines with silver nitrate and sulphate, 1881, A., 1129.

- Mixter, William Gilbert**, formation of urea from ammonia and carbonic anhydride, 1882, A., 721.
- Mixter, William Gilbert**, and **Edward Salisbury Dana**, specific heat of zirconium, silicon, and boron, 1874, 118.
- Modderman, Tjaden**. See **Tjaden-Modderman**.
- Moddermann, J.**, new method of detecting ammonia, 1874, 602.
- Modrzejewski, E.** See **Nestor Gréchant**.
- Moë, Friedrich E. G.** See **Victor Merz**.
- Möckel, Rich.** See **A. Link**.
- Möhl, Heinrich**, the mineralogical constitution and classification of phonolites, 1874, 560.
- the Scheidsberg near Remagen on the Rhine, 1874, 667.
- olivine rock, 1878, A., 119.
- Möhlau, Richard**, *o*-diamidodiphenetol, 1879, A., 939.
- action of primary aromatic amines on acetophenone bromide, 1881, A., 262.
- Möhlau, Richard**, and **Paul Oehmichen**, dibromo- and tribromo-*o*-amidophenetoils and some of their derivatives, 1882, A., 395.
- Möhlau, Richard**. See also **Rudolf Wilhelm Schnitt**.
- Möller, Hermann**, cyanamido-compounds of succinic acid, 1881, A., 258.
- Möller, Hermann**. See also **Edmund Drechsel**.
- Moeller, Joseph**, Myall wood, 1877, i., 119.
- fibrous materials, 1879, A., 859.
- linaloe wood, 1880, A., 423.
- free carbonic anhydride in soils, 1880, A., 505.
- prinavera wood, 1880, A., 596.
- Mogdad coffee, 1880, A., 936; 1881, A., 483.
- Moeller, Julius**. See **Isidor Rosenthal**.
- Mörner, (Graf) Karl Axel Hampus**, alkali-albuminate and syntonin, 1879, A., 489.
- Möslinger, Wilhelm**, some new octyl derivatives, 1876, ii., 393.
- essential oil of the fruit of *Har-cetum Spondylium*, 1877, ii., 125.
- Moffat, R. Carter**, bituminous deposits of the valley of the Pescara, South Italy, 1875, 299.
- Mohr, Carl**, volumetric determination of phosphoric acid by means of uranium in the presence of iron, 1880, A., 575.
- estimation of phosphoric acid, 1882, A., 1231.
- Mohr, Carl Friedrich**, an improved gas holder, 1873, 36.
- estimation of nitric acid, 1873, 91.
- the nature of the alkaline chromates, 1873, 351.
- preparation of acetic acid, 1873, 613.
- precipitation of magnesia, 1873, 911.
- estimation of the hardness of spring waters, 1873, 1054.
- estimation of free oxygen, 1874, 186.
- estimation of potash, 1874, 188.
- determination of sulphurous and hydrosulphuric acids with iodine, 1874, 288.
- techno-chemical gas analysis, 1874, 291.
- new spirit lamp, 1874, 291.
- estimation of grape sugar, 1874, 292.
- a new salt of iron, 1874, 962.
- test papers, 1874, 1098.
- the treatment of litmus, 1874, 1099.
- the estimation of iodine by precipitation, 1874, 1099.
- alcoholic fermentation, 1875, 284.
- the nature and origin of meteorites, 1876, i., 685.
- on Stolba's method for the alkalimetric estimation of phosphoric acid, 1877, ii., 800.
- apparently anomalous decompositions effected by carbonic acid, 1878, A., 111.
- material for standard weights and measures, 1879, A., 102.
- nature of cohesion and its chemical significance, 1879, A., 579.
- Moissan, Henri**, on the oxides of iron, 1877, ii., 573.
- allotropic varieties of magnetic oxide of iron, 1878, A., 557.
- amalgams of chromium, iron, manganese, nickel, and cobalt, 1879, A., 693.
- iron reduced by hydrogen, 1879, A., 887.
- absorption of oxygen and expiration of carbonic anhydride by plants, 1880, A., 116.
- sulphides and selenides of chromium, 1880, A., 527.
- action of chlorine on chromium sesquioxide, 1880, A., 793.
- sesquioxide of chromium, 1881, A., 21.
- metallic oxides of the iron group, 1881, A., 74.

- Moissan, Henri**, preparation and properties of chromous chloride and sulphate, 1881, A., 684.  
 — chromous bromide, iodide, and oxalate, 1881, A., 685.  
 — potassium chromocyanide, 1882, A., 485.
- Moissan, Henri**. See also *Pierre Paul Dehérain, Alexandre Léon Etard*.
- Moitessier, A.** See *Rodolphe Charles Engel*.
- Moldenhauer, Carl**, pure commercial potassium cyanide, 1877, ii., 423.
- Moleschott, Jacob Albert Willibrord**, action of bile on peptones, 1877, ii., 347.
- Moleschott, Jacob Albert Willibrord** (and others), influence of light on chemical action in animals, 1881, A., 833.
- Molisch, Hans**, separation of calcium carbonate in the wood of dicotyledonous plants, 1882, A., 82.  
 — deposit of calcium carbonate in dicotyledonous trees, 1882, A., 887.
- Moll, Jan Willem**, action of frost on evergreens, 1882, A., 549.
- Moltschanowski, Nicolai Was**, azoxybenzene, 1882, A., 965.
- Monckhoven, D. van**, carbon paper rendered sensitive without a chrome bath, 1878, A., 919.
- Mondésir, Paul de**, comparison of the curves of the tensions of saturated vapours. 1880, A., 435.  
 — variation of the tension of vapour emitted above and below the point of fusion, 1880, A., 605.
- Mondésir, Piarron de**. See *Piarron de Mondésir*.
- Monger, R.**, action of salt on molten copper of various degrees of dryness, 1882, A., 669.
- Monier, Emile**, the hardness and density of carbon from pure sugar, 1874, 674.  
 — action of oxalic acid on sodium silicate, 1878, A., 198.  
 — transparent hydrated silica and hydrophane, 1878, A., 770.
- Monnet, Prosper, and Frédéric Reverdin**, preparation of alcoholic chlorides and their application in the manufacture of colouring matters, 1878, A., 283.
- Monnet, Prosper, Frédéric Reverdin, and Emilio Nölting**, methylated derivatives of aniline and toluidine and the colours obtained therefrom, 1879, A., 310.  
 — — — — — presence of *m*-nitrotoluene in commercial nitrotoluene, 1879, A., 625.
- Monnet, Prosper, Frédéric Reverdin, and Emilio Nölting**, influence of *m*-toluidine on the preparation of rosaniline, 1879, A., 625.
- Monnier, Denis, and Carl Vogt**, artificial production of elementary organic forms, 1882, A., 356.
- Monselise, Giulio**. See *Wilhelm Korner*.
- Montgolfier, J. de**, monobromo- and dibromo-camphors, 1875, 1193.  
 — the isomeric camphors and borneols, 1876, ii., 79.  
 — camphic acid, 1876, ii., 87.  
 — rotatory power of the camphols, 1877, i., 78 ; ii., 626.  
 — patchouli camphor, 1877, i., 478.  
 — oxidation of camphor, 1877, ii., 903.  
 — isomerides and derivatives of camphor and camphol, 1878, A., 891.  
 — derivatives of terebenthene, 1879, A., 328.  
 — transformation of camphic acid into camphor, 1879, A., 726.  
 — terebenthene dihydrochloride, 1879, A., 944.  
 — isomerides of borneol, 1879, A., 944.
- Montholon, F. de**. See *Laurent Naudin*.
- Montlaur, (Vicomte) Amaury de**, manufacture of gallein, 1882, A., 126.
- Moore, Gilson E.**, chalcophanite, a new mineral species, 1878, A., 115.  
 — hetaerolite, a new mineral, 1879, A., 17.
- Moore, Samuel William**, new process for preserving wood from decay, 1875, 792.
- Moore, Thomas**, separation of cobalt and nickel from iron, 1881, A., 1171.
- Moot, Charles G.**, action of iodine on phosphorus trichloride, 1881, A., 138.
- Morat, J. P.** See *A. Dastre*.
- Morawski, Theodor**, monochloritramalic acid, 1873, 1221.  
 — the non-chlorinated derivatives of monochlorocitramalic acid, 1875, 142.  
 — oxycitraconic acid and other derivatives of the pyrocitric acids, 1875, 1252.  
 — action of chlorine on sodium citraconate, 1876, i., 562.  
 — action of chlorine on sodium mesaconate, 1876, i., 564.  
 — substituted crotonic acids from the pyrocitric acids, 1878, A., 213.  
 — citramalic acid, 1879, A., 707.  
 — glycerin cement, 1880, A., 428.  
 — lead glycerides and the quantitative estimation of glycerol, 1881, A., 145.



- Morawski, Theodor**, and **Johann Stingl**, investigation of the manganese ores of Bukowina, 1877, ii., 175.
- — — potassium permanganate and its oxidation products, 1879, A., 204.
- — — volumetric estimation of manganese, 1879, A., 277.
- — — modification of Bunsen's method of manganese determination, 1879, A., 278.
- Morawski, Theodor**. See also **Johann Stingl**.
- Moreau**. See **C. Borel**.
- Moreau, Armand**, relation between the composition of the air of the swimming bladder, and the depth at which fish are captured, 1875, 375.
- Morel, Ch.**, tetrachloride of carbon and its use as an anæsthetic, 1877, ii., 912.
- Morell, Aug.**, preparation of alcoholic lakes, 1873, 960.
- Morelle, E.**, a new carbohydrate, 1882, A., 159.
- Morelle, E.** See also **Henri Lescœur**.
- Morgan, Frank H.** See **William B. Allbright**.
- Morgan, S. W.**, composition of ultramarine, 1873, 475.
- Morgan, Thomas M.**, researches on the paraffins in Pennsylvanian petroleum, 1875, 301.
- — — ethylphenylacetylene, 1876, i., 162.
- — — composition of a well-water at Grouville, Jersey, 1879, A., 1072.
- — — action of the oxides of nitrogen on glass at a high temperature, 1882, A., 361.
- Morgan, William**, determination of sulphur in coal, 1877, ii., 217.
- Morgen, August**, solubility of certain manure materials, 1881, A., 120.
- — — use of the azotometer for agricultural investigations, 1881, A., 464.
- — — ammonia fixing power of certain salts, 1882, A., 651.
- Morgen, August**. See also **Paul Behrend**.
- Morges, E.**, thermic researches on the chromates, 1878, A., 765, 832.
- Moriggia, Aliprando**, the natural poison of the human corpse, 1877, i., 331.
- Moriggia, Aliprando**, and **Attilio Battistini**, the poisonous nature of the extract from the human corpse, 1876, ii., 647.
- Morin, Henri**, Chinese and Japanese bronzes of unusually deep colour, 1874, 927.
- — — saccharimetry, 1878, A., 167.
- — — vitreous fused saccharose, 1878, A., 657.
- Morin, Henri**, gelose, 1881, A., 403.
- — — essence of linaloes, 1881, A., 738; 1882, A., 737.
- Morin, Henri**. See also **Aimé Girard**.
- Moritz, Edward Ralph**, synthetical production of new acids of the pyruvic series, 1881, T., 13.
- Moritz, Edward Ralph**, and **Arthur Hartley**, ash of cereals, 1882, A., 1313.
- Moritz, Edward Ralph**. See also **Ludwig Claisen**.
- Moritz, J.**, influence of oxygen on fermentation, 1874, 599.
- — — mode of action of sulphur as a remedy against vine disease, 1880, A., 281.
- — — analyses of wine and must, 1881, A., 1090.
- — — amount of sulphurous acid necessary to prevent the formation of "mother" in wine, 1882, A., 1336.
- — — effect of adding soda or acids to the water used for seasoning casks, 1882, A., 1337.
- Moriya, M.**, on menthol or peppermint camphor, 1881, T., 77.
- Morley, Edward W.**, variation of the amount of oxygen in the atmosphere, 1880, A., 90, 698; 1882, A., 278, 1026.
- — — Jolly's hypothesis as to the cause of the variation in the proportion of oxygen in the atmosphere, 1882, A., 278.
- — — accurate and rapid method for analysis of air, 1882, A., 335.
- — — numerical results for the mean ratio of oxygen to the sum of oxygen and nitrogen in atmospheric air, 1882, A., 1025.
- — — some points in the construction of an apparatus for the accurate analysis of gases, 1882, A., 1131.
- Morley, Henry Forster**, Grove's gas battery, 1878, A., 463.
- — — on methylated dioxethylenamines, 1880, T., 232.
- — — action of nitrous acid on mono- and di-ethylenediphenyldiamines, 1880, A., 112.
- — — propylneurine, 1880, A., 877.
- — — isopropylneurine, 1881, A., 151.
- — — on oxypropyltoluidine, 1882, T., 387; A., 723.
- Morley, Henry Forster**. See also **Ludwig Claisen**, **Casimir Wurster**.
- Moro, Giuseppe**. See **Wilhelm Michler**.
- Morrell, T. T.**, estimation of sulphur in iron and steel, 1874, 187.
- — — volumetric estimation of alcohol, 1878, A., 246.



- Morris, George Harris**, on  $\alpha$ -methyl-hydroxysuccinic acid, the product of the action of anhydrous hydrocyanic acid upon ethyl acetoacetate, 1880, T., 6.  
 — on some constituents of resin spirit, 1882, T., 167.
- Morris, James**, influence of mass on chemical action, 1882, A., 1261.
- Morrison, Robert Milner**, method of preparing methylamine, 1882, A., 592.
- Morse, Harmon Northrup**, benzoyl-amidophenols, 1875, 272.  
 — new method of preparing acetyl-amidophenols, 1878, A., 416.  
 — estimation of barium as chromate, 1881, A., 848.
- Morse, Harmon Northrup, and William Calhoun Day**, determination of chromium in chrome iron ore, 1881, A., 942.
- Morse, Harmon Northrup, and Ira Reimsen**, oxidation of ethyltoluene, 1878, A., 405.
- Morton, Henry**, fluorescent relations of anthraquinone and chrysogen, 1873, 235.  
 — fluorescent relations of certain solid hydrocarbons found in petroleum distillates, 1873, 235; 1874, 14.  
 — fluorescent relations of basic uranium salts, 1874, 642.  
 — fluorescent relations of chrysene and pyrene, 1875, 469.  
 — thallene, 1877, ii., 422.  
 — chronology of the isomeric purpurins, 1879, A., 943.  
 — displacement of the absorption bands of purpurin in alum solutions, 1881, A., 488.
- Morton, Henry, and Henry Carrington Bolton**, the fluorescent and absorption spectra of uranium salts, 1874, 12.
- Morton, Henry, and Wm. E. Geyer**, paraffins in commercial "water gas," 1878, A., 609.
- Moschini, Luigi, and Eusto Sestini**, experiments on the making of wine according to Chaptal's method, 1873, 1275.
- Moser, James**, the Torricellian vacuum, 1877, ii., 163.  
 — the spectra of chemical compounds, 1877, ii., 685.  
 — galvanic current between solutions of the same substance of different degrees of concentration, 1878, A., 463.  
 — remarks on Vogel's communication on "the difference of absorption spectra of one and the same body," 1878, A., 829.
- Moser, James**, the circuit produced by the reaction current of electrolysis and by evaporation and condensation, 1881, A., 1092.
- Moser, Jul. (Ritter) von**, composition of yam tubers, 1877, ii., 795.  
 — cultivation of dhurra or sorgho grass (*Sorghum saccharatum* and *Sorghum vulgare*), 1879, A., 823.  
 — potassium salts as a manure, 1879, A., 826.  
 — cultivation and preservation of maize, 1879, A., 960.  
 — composition of the kernels and husks of the seed of *Gleditschia glabra*, 1880, A., 133.  
 — feeding value of some manufacturers' waste, 1880, A., 183.  
 — manuring of sugar beet, 1880, A., 185.  
 — on various manures, 1880, A., 344.  
 — examination of oats, 1882, A., 647.  
 — composition of hay grown on hills and meadows, 1882, A., 766.
- Moser, Jul. (Ritter) von, and Franz Soxhlet**, analyses of milk, 1880, A., 520.
- Moser, Jul. (Ritter) von (and others)**, analyses of sugar, 1880, A., 519.
- Moss, Richard Jackson**, condensation of vapour of mercury on selenium in the Sprengel vacuum, 1876, ii., 271.
- Motay, Tessié du**. See **Tessié du Motay**.
- Mott, Henry Augustus**, American baking powders and alum, 1879, A., 1077.  
 — effects of alumina salts on digestion, 1881, A., 189.  
 — absorption of sugar by animal charcoal, 1882, A., 122.
- Motteu, Jean**, action of heat on sugar and sugar solutions, 1879, A., 911.
- Mouchot, A.**, industrial utilisation of solar heat, 1880, A., 765.
- Mourson, J.** See **Edouard Heckel**.
- Moutard-Martin, Robert**. See **Charles Richet**.
- Moutier, J.**, on the vapours emitted at a given temperature by the same body under two different states, 1873, 838.  
 — heat of transformation, 1873, 998.  
 — heat evolved during the combination of hydrogen with metals, 1875, 115, 1151.  
 — on the mixture of gases, and on molecular action, 1875, 1153.  
 — on vapour density and cohesion, 1875, 1154.
- Moyret, Marius**, application of sulphurous anhydride in bleaching, 1882, A., 1337.

- Mratschkowsky**, on the amount of disodic orthophosphate in the serum of Herlihora, 1878, A., 519.
- Mrowec, Stanislaus**, carbon bisulphide manufacture in Swoszowice, and its use for the extraction of sulphur, 1879, A., 837.
- Muck, Fritz**, the "scales" which separate from molten pig iron, 1875, 672.
- on A. Sauer's method for estimating sulphur, 1876, i., 742.
- removal of large quantities of sodium chloride in mineral analyses, 1880, A., 580.
- determination of ash in coal, 1880, A., 590.
- occurrence of a mineral in the Courl mine, Westphalia, 1882, A., 20.
- Mügge, Otto**, felspar from the rhombic porphyry of Christiania, 1881, A., 1019; 1882, A., 22.
- Mühlhäuser, Otto**, *o*-anisidine, 1880, A., 611.
- *o*-anisidine and amidodimethyl-quinol, 1882, A., 302.
- Mühlhäuser, Otto**. See also *Carl Hell*.
- Müller, Albrecht**, pseudomorphs of spathic iron after silicate of zinc, 1876, i., 530.
- Müller, Alexander**, affinity in solutions of ferric chloride, 1873, 847; 1874, 231.
- analysis of cheese, 1873, 1266.
- Berlin water supply and town purification, 1873, 1267.
- application of town sewage to vegetation, 1875, 1278.
- purification and utilisation of sewage, 1878, A., 161.
- water analysis, 1880, A., 139.
- oxalic acid in beet leaves, 1880, A., 733.
- valuation of copper for roofing, 1880, A., 826.
- irrigation with sewage, 1881, A., 842.
- purification of foul water, 1881, A., 854.
- Müller, C.**, estimation of phosphorus in slag from a blast-furnace, 1881, A., 939.
- Müller, C. L.**, derivatives of *p*- and *o*-nitrocinamic acids, 1882, A., 840.
- Müller, C. L.**, and *H. Kircher*, action of lead and manganese dioxides on the haloid salts of the metals in presence of acetic acid, 1882, A., 1132.
- Müller, C. L.** See also *Emil Erlenmeyer*.
- Müller, D.**, a contribution to Bastian's archibiosis, 1877, ii., 632.
- Müller, Erwin**. See *Richard E. Meyer*.
- Mueller, (Baron) Ferdinand von**, and *L. Rummel*, note on two new vegeto-alkaloids, 1879, T., 31.
- Müller, Friedrich Charles George**, researches on galvanic polarisation, and the distribution of the current in electrolytes, 1875, 123.
- diffusion of gases into soap bubbles, 1875, 1157.
- rise of temperature occasioned by passing steam into saline solutions, and on the temperature of the vapours from saline solutions, 1877, i., 430.
- specific weights of gases; lecture experiment, 1877, i., 431.
- synthesis of water; lecture experiment, 1877, i., 438.
- on the temperature of steam formed under normal conditions, 1877, ii., 274.
- the Bessemer process, 1878, A., 620; 1879, A., 566.
- gases in iron and steel, 1879, A., 437.
- Müller, Friedrich H. S.**, and *Friedrich Wiesinger*, preparation of sulpho-compounds from diazo-compounds by means of sulphurous acid, 1879, A., 933.
- Müller, H.** (Brunswick), and *Conrad Pauly*, preparation of potassium nitrite, 1879, A., 595.
- Müller, H.** (Freiburg i. B.). See *Adolph Claus*.
- Müller, Heinrich Wilhelm Hugo**. See *Warren De la Rue*.
- Müller, Hermann** (Fraureuth), conch grass sugar and triticin, 1874, 39, 170.
- Müller, Hermann** (Hersfeld), *m*-chlorophenol and its nitro-derivatives, 1874, 157.
- Müller, Hermann** (Hersfeld). See also *August Faust*.
- Müller, Hermann** (Thurgau), locality of albumin secretion in plants, 1880, A., 492.
- Müller, Johann**, Bunsen's chromic acid battery, 1873, 125.
- the chromic acid solution for batteries, 1874, 429.
- Müller, Julius**, the value of carbon filters in purifying drinking waters, 1873, 302, 1268.
- method of distinguishing pure ground coffee from coffee substitutes, 1873, 1065.
- the antiseptic powers of salicylic acid and of carboic acid (*phenol*), compared, 1875, 460.

- Müller, Julius**, adulteration of saffron, 1876, i., 824.
- Müller, Julius**. See also *Wilhelm Ebstein, Bernhard Fischer*.
- Müller, Karl**, analysis of a calculus from a horse, 1880, A., 174.
- cultivation of beet seeds, 1880, A., 920.
- Müller, Karl**, and *W. C. Müller*, comparative experiments on the manurial values of soluble, reduced, and precipitated phosphates on sandy soils, 1881, A., 758.
- Müller, Math.**, hæmoglobin and quinine, 1873, 288.
- Müller, Max** (Bonn), contributions to the knowledge of monochlorosulphuric acid, 1873, 841.
- oxymethanesulphonic and oxymethanedisulphonic acids, 1874, 45.
- oxypropanesulphonic acids and the combination of acrolein with the alkaline bisulphites, 1874, 360.
- Müller, Max** (Brunswick), technology of glass, 1881, A., 323.
- Müller, Otto**, preparation of mandelic acid, 1873, 1038.
- Müller, Rudolph**, methylethylacetic and hydroxymyristic acids in the essential oil of the fruit of *Angelica Archangelica*, 1882, A., 496.
- Müller, W. C.** See *Karl Müller*.
- Müller, Wilhelm Heinrich Mac.** See *Ferdinand Tiemann*.
- Müller, Worm.** See *Worm-Müller*.
- Müller-Erbach, Wilhelm**, a beetle endiometer, 1873, 292.
- the breathing of frogs, 1873, 1154.
- change of volume of solid bodies occasioned by the formation of chemical compounds in the same state of aggregation, 1874, 220.
- reduction of metallic oxides by hydrogen as a means for the separation and quantitative estimation of metals, 1875, 381.
- collection of facts showing that chemical transposition between solid substances is accompanied by contraction of volume, 1876, i., 669.
- affinity of sodium hydrate and calcium chloride for water, 1878, A., 471.
- luminosity of phosphorus, 1880, A., 298.
- reduction of metallic oxides by hydrogen, 1880, A., 298.
- volume relations of haloid salts, 1881, A., 71.
- volume relations in the formation and decomposition of salts, 1881, A., 219.
- Müller-Erbach, Wilhelm**, tension of aqueous vapour in presence of different hygroscopic bodies, 1881, A., 782.
- affinity values of fluorine with the metals as deduced from the law of smallest volumes, 1882, A., 137.
- affinities of metals for oxygen, as shown by the heat developed and contraction produced during combination, 1882, A., 451.
- affinity value of the silicofluorides of the metals as deduced from the law of smallest volumes, 1882, A., 1024.
- Müller-Jacobs, Armand**, mordants, 1874, 722; 1879, A., 187.
- preparation and new reactions of acetylphenylhydrosamine, 1877, ii., 885.
- action of potassium nitrite on nitraniline and acetoneitranilide, 1878, A., 140.
- preparation of solid fatty acids, 1882, A., 1147.
- Münch, Reinh.**, di- $\psi$ -propyl ketone and methyl  $\psi$ -propyl ketone, 1875, 247; 1876, ii., 67.
- Muencke, Robert**, a universal burner, 1874, 653.
- Müntz, Achille**, saccharine matter contained in Fungi, 1873, 759; 1875, 380.
- properties and composition of a cellular tissue diffused throughout the organism of the Vertebrata, 1873, 920.
- on the functions of Fungi, 1875, 380.
- chemical and physiological fermentations, 1875, 1208.
- transformations undergone by cane sugar in raw sugar and in the sugar cane, 1876, i., 807.
- influence of certain salts and of lime in saccharimetry, 1876, ii., 552.
- combination of tannin with vegetable tissue, 1877, ii., 350.
- researches on the intracellular alcoholic fermentation of plants, 1878, A., 527.
- ripening of rye, 1879, A., 337.
- influence of food on the constitution of the fat of animals, 1881, A., 752.
- cultivation of hops, 1881, A., 931.
- galactin, 1882, A., 707.
- preservation of malting barley, 1882, A., 1014.
- Müntz, Achille**, and *Emile Aubin*, optical properties of mannite, 1877, i., 291, 589.
- estimation of carbonic anhydride in the air, 1881, A., 468.
- proportion of carbonic anhydride in the air, 1881, A., 875.

- Müntz, *Achille*, and *Emile Aubin*, proportion of carbonic anhydride in the upper regions of the atmosphere, 1882, A., 361.
- Müntz, *Achille*, and *Ramspacher*, estimation of tannin, 1874, 1183.
- Müntz, *Achille* (and others), feeding horses with maize, 1882, A., 415.
- Müntz, *Achille*. See also *De la Loyère*, *Vicente Marciano*, *Jean Jacques Théophile Schloesing*.
- Muir, *John*, thallium chloride, 1876, i., 857.
- Muir, *Matthew Moncrieff Pattison*, on the perbromates, 1874, 324; 1876, ii., 169.
- New Zealand kaori gum, 1871, 733.
- nitrosyl bromide and sulphur bromide, 1875, 844.
- bismuth compounds, 1876, i., 144; ii., 12; 1877, i., 24, 615; ii., 40, 128; 1878, T., 192.
- volumetric estimation of bismuth, 1876, i., 483; 1877, i., 658; ii., 674; 1878, T., 70.
- carbon dioxide in the air of sea coast places, 1876, i., 679.
- estimation of small quantities of lead and copper, 1876, i., 751.
- solubility of potassium perchlorate in water, 1876, i., 877.
- basic bismuth perchlorate, 1876, i., 878.
- on certain circumstances which affect the purity of water supplied for domestic purposes, 1876, ii., 119.
- on the solvent action of various saline solutions on lead, 1877, i., 660.
- action of water and of saline solutions upon lead, 1877, i., 690.
- detection of small quantities of bismuth, 1877, ii., 45.
- influence exerted by time and mass in certain reactions in which insoluble salts are produced, 1878, T., 27.
- note on an edible clay from New Zealand, 1878, A., 120.
- on the conditions affecting the equilibrium of certain chemical systems, 1879, T., 311.
- on the action of aqueous hydrochloric acid upon bismuthous oxide, 1879, T., 335.
- note on chemical equilibrium, 1880, T., 424.
- on essential oil of sage, 1880, T., 678.
- the action of water on bismuthous iodide: a lecture experiment. 1882, T., 4.
- Muir, *Matthew Moncrieff Pattison*, detection of tin in presence of antimony, 1882, A., 777.
- Muir, *Matthew Moncrieff Pattison*, and *Charles Edward Robbs*, on the volumetric estimation of bismuth in the form of oxalate, 1882, T., 1.
- note on the action of sulphuric acid on zinc and on tin, 1882, A., 693.
- Muir, *Matthew Moncrieff Pattison*, and *Charles Slater*, on the influence exerted upon the course of certain chemical changes by variations in the amount of water of dilution, 1880, T., 60.
- Muir, *Matthew Moncrieff Pattison*, and *Shigetake Suguira*, modification of Hofmann's vapour density apparatus, 1877, ii., 140.
- Muir, *Matthew Moncrieff Pattison*, *George Bernard Hoffmeister*, and *Charles Edward Robbs*, on bismuth and bismuth compounds, 1881, T., 21.
- Muir, *Matthew Moncrieff Pattison*. See also *Shigetake Suguira*.
- Mulder, *Edward*, chlorinated derivatives of acetone, 1873, 379.
- diglycollamic diuranide, 1873, 382.
- lecture experiments with the thermo-analyser, 1873, 526.
- the metallic derivatives and constitutional formula of cyanamide, 1873, 1023.
- action of ammonium trisulpho-carbonate and sulphocarbamate on acetone and aldehydes, 1874, 47.
- silver urea, 1874, 48.
- action of ammonia on bromoacetyl-urea, 1874, 48.
- derivatives of uric acid, 1874, 48.
- isouric acid, 1874, 255.
- multiple rotatory powers, 1875, 222.
- cyanamide, 1875, 445.
- uroxoanic and allantoxanic acids, 1876, i., 568.
- $\beta$ -amidopropionic acid and  $\beta$ -guanidopropionic acid, 1877, ii., 311.
- synthesis of cyanacetylureas and nurexoin, 1878, A., 786.
- synthesis of dimethylbarbituric acid, 1879, A., 618.
- action of bromine on uramil, 1881, A., 801.
- *n*-cyanic acid N:C.OH and its derivatives, 1882, A., 590.
- Mulder, *Edward*, and *Gustav Jacob Wilhelm Bremer*, action of chlorine monoxide on ethylene, 1879, A., 303.



- Mulder, Eduard, and Hendrik Gijts** *Landmeter van der Meulen*, action of zinc ethyl on ethyl tartrate, 1881, A., 714.  
 ——— thermochemistry of ozone, 1882, A., 915.
- Mulder, Eduard, and J. A. Roorda Smit**, cyanamide, 1875, 446.
- Mulder, Gerardus Johannes**, obituary notice of, 1881, T., 181.
- Muller, Paul**, utilisation of wine-lees, 1877, ii., 952.
- Muller, Paul, and Hauer**, fermentation of beer, 1878, A., 913; 1879, A., 1079.
- Munier, Joseph**. See **Otto Hecht**.
- Munk, Immanuel**, the formation of urea in the liver; an experimental contribution to the question of the examination for urea in the blood and parenchyma, 1876, i., 89.  
 ——— recognition of phenol-forming substances in urine, 1876, ii., 212.  
 ——— on the form of combination of urea in the liver, 1877, i., 730.  
 ——— thiocyanates in urine, 1877, ii., 347.  
 ——— peptone-forming ferment in saliva, 1877, ii., 347.  
 ——— diastatic ferments, 1877, ii., 351.  
 ——— action of glycerol on the processes of fermentation, 1878, A., 526.
- Munk, Immanuel** (and others), nutritive value of glycerol, 1881, A., 114.
- Murdock, John, and Oscar Gustav Doeberner**, hydrurilic acid, 1876, ii., 510.
- Muschketoff, Ivan W. von**, wolyuite, 1873, 1211.
- Musculus, Friedrich**, test paper for urea, 1874, 391; 1876, i., 775.  
 ——— soluble starch, 1874, 1077, 1174.  
 ——— the ferment of urea, 1876, i., 952.  
 ——— modifications of the physical properties of starch, 1879, A., 518; 1881, A., 888.
- Musculus, Friedrich, and Carl Amthor**, wine made from unripe grapes, 1882, A., 1235.
- Musculus, Friedrich, and D. Gruber**, starch, 1878, A., 778.
- Musculus, Friedrich, and Friedrich Joseph (Freiherr) von Mering**, on a new body occurring in the urine after the ingestion of chloral hydrate, 1875, 657, 1040.  
 ——— action of diastase, saliva, and pancreatic juice on starch and glucose, 1879, A., 370.
- Musculus, Friedrich, and Arthur Meyer**, conversion of glucose into dextrin, 1881, A., 570.  
 ——— erythro-dextrin, 1881, A., 570.
- Muspratt, Frederick**, obituary notice of, 1873, 780.
- Musso, Giovanni**, estimation of nitrogen in milk and its educts, 1877, ii., 233, 941.  
 ——— presence of sulphuric acid in milk, 1880, A., 423.  
 ——— lactic acid in and alcoholic fermentation of milk, 1881, A., 944.
- Musso, Giovanni, and Angelo Menozzi**, formation of fat from casein in the ripening of cheese, 1879, A., 996.  
 ——— milk albumin and curd formation, 1880, A., 900.
- Musso, Giovanni** (and others), ripening of cheese, 1881, A., 1184.
- Musso, Giovanni**. See also **Lutigi Manetti**.
- Mustapha, Ibrahim**, active principle of *Ammi Visnaga*, 1879, A., 1011.
- Muter, John**, analysis of milk for clinical purposes, 1873, 537.  
 ——— analysis of butter, 1877, i., 233.  
 ——— simple method of estimating the value of commercial samples of salicylic acid, and of detecting it in milk and similar organic solutions, 1877, ii., 227.  
 ——— detection of castor oil and other fixed oils in balsam of copaiba, 1877, ii., 374.  
 ——— copper in vegetables, 1877, ii., 511.  
 ——— mares' milk, 1877, ii., 520.  
 ——— adulteration of milk with glycerol, 1878, A., 684.  
 ——— volumetric estimation of glycerol, 1881, A., 1174.
- Mutschler, Carl**. See **Richard Hornberger**.
- Mutschler, L.**, cyclamin, primulin, and primula camphor, 1877, ii., 903.
- Mutschler, L., and C. Krauch**, composition of candle nuts, 1879, A., 957.
- Mutschler, L.** See also **Franz Josef König**.
- Myers, Jacob**, regulation of gas flames for temperatures above the boiling point of mercury, 1873, 129.  
 ——— decomposition (dissociation) of mercuric oxide by heat, 1873, 603.  
 ——— reactions of various metallic salts, 1873, 845.
- Mylius, C., and Ernst Mylius**, the composition of cascarrillin, 1874, 81.
- Mylius, Ernst**, carbonic and sulpho-carbonic ethers of isobutyl alcohol, 1873, 266.  
 ——— isobutylsulphonic acid, 1873, 267.  
 ——— carbonyl compounds of isobutyl, 1873, 872.



- Mylius, Ernst**, the oxidation products of caryophyllin, 1874, 80.  
 — convenient stopper for barettes, 1874, 822.  
 — estimation of morphine in opium, 1880, A., 829; 1881, A., 945.

## N.

- Naccari, Andrea**, and **Stefano Pagliani**, absorption of gases by liquids, 1880, A., 525.  
**Nadler, G.**, a new alkaloid from morphine, 1874, 589.  
**Nägeli, Karl Wilhelm von**, chemical composition of yeast, 1878, A., 911.  
 — nutrition of the lower Fungi, 1881, A., 1058.  
 — growth of starch grains by intussusception, 1882, A., 761.  
**Nägeli, Karl Wilhelm von**, and **Oscar Loew**, formation of fat in the growth of Fungi, 1880, A., 337.  
 — nutrition of the lower orders of Fungi by carbonaceous and nitrogenous matter, 1881, A., 299.  
**Nägeli, Walter**, contribution to our knowledge of the starch group, 1875, 55.  
**Nagai, Nagajosi**, diaceto- $\alpha$ -homoprotocatechuic acid, 1878, A., 579.  
**Nagai, Nagajosi**. See also **Ferdinand Tiemann**.  
**Nagelvoort, J. B.**, ammonium sulphomolybdate as a test for alkaloids, 1877, ii., 230.  
**Nahnsen, Martin**. See **Karl Kraut**.  
**Nakamura, Teikichi**, on a new method of determining sulphur in coal, 1879, T., 785.  
**Nakh**, artificial chalk, 1874, 609.  
**Nallino, Giovanni**, composition of "candle nuts," and of the nuts and oil-cake of the cocoa palm, 1873, 85.  
**Nanquette, I.** (and others), gypsum as manure, 1881, A., 1076.  
**Nantier, A.** See **Pierre Paul Dehérain**.  
**Narr, Friedrich**, behaviour of electric currents in rarefied gases, 1879, A., 345.  
 — discharge of electricity in gases and high vacua, 1881, A., 70.  
**Nasini, Raffaele**, specific rotatory power of parasantonide, 1881, A., 919.  
**Nasini, Raffaele**. See also **Giovanni Carnelutti**.  
**Nasse, Hermann**, transudation and diffusion through the walls of the capillary vessels, 1878, A., 519.  
**Nasse, Otto Joh. Friedrich**, decomposition of albuminoids by baryta, 1873, 514.  
 — proteids, 1873, 760; 1874, 379.  
 — researches on unorganised ferments, 1876, i., 412.  
 — physiology of the carbohydrates, 1877, ii., 503.  
 — influence of gases on fermentation, 1878, A., 90.  
**Natanson, Stanislaw**, Fittica's fourth nitrophenol, 1880, A., 163.  
**Natanson, Stanislaw**, and **Georg Vortmann**, tin phosphide, 1878, A., 13.  
**Natanson, Stanislaw**. See also **Carl Theodor Liebermann**.  
**Nativeille, Ch. Adolphe**, extraction of crystallised digitalin, 1875, 276.  
**Natterer, Konrad**, monochloraldehyde, 1882, A., 1045.  
**Nauckhoff, E. Gustaf R.**, occurrence of native iron in the basalt near Ovikak in Greenland, 1874, 347.  
**Naudin, Charles Victor**, influence of atmospheric electricity on the growth of plants, 1880, A., 909.  
**Naudin, Laureat**, essence of angelica, 1882, A., 410.  
 — preparation of cymene, 1882, A., 608.  
**Naudin, Laurent**, and **E. de Montholon**, decomposition of insoluble carbonates by hydrogen sulphide, 1876, ii., 479.  
 — decomposition of potassium cyanide, zinc cyanide, and potassium formate in carbonic acid, air, and pure hydrogen, 1877, i., 66.  
**Naumann, Alexander**, explanation of the difference in boiling points of metameric bodies, 1874, 529.  
 — influence of temperature on the heat produced during chemical change, 1874, 536.  
 — influence of the position of the oxygen on the boiling points of metameres, 1874, 563.  
 — dissociation of empiric sulphate, 1875, 426.  
 — on the specific heat of gases with special reference to mercury vapour, 1876, i., 37.  
 — decomposition of alum solutions at 100°, 1876, i., 682.  
 — dissociation of chloral hydrate, 1876, ii., 621; 1879, A., 690.  
 — behaviour of bromine and sulphur bromide to hydrogen sulphide, 1877, i., 272.  
 — decomposition of crystallised potash alum at 100°, 1877, ii., 166.

- Naumann, Alexander**, distillation of benzene, toluene, and xylene by steam, 1878, A., 47.
- distillation of nitrobenzene, ethyl bromide, ethyl benzoate, and naphthalene by means of steam, 1878, A., 138.
- vapour tensions of compounds, 1878, A., 263.
- a new method of determining molecular weights, 1878, A., 264.
- distillation of oil of turpentine and carbon tetrachloride by steam, 1878, A., 283.
- molecular constitution of vapours, 1878, A., 467.
- density and decomposition of nitric oxide, 1879, A., 195.
- relation between molecular weight and density of gases, 1880, A., 525.
- dissociation of iodine vapour, 1880, A., 696.
- Naylor, William Arthur Harrison**, volumetric estimation of arsenic acid, 1880, A., 421.
- fruit of *Omphalocarpum procerum*, 1882, A., 307.
- Neale, A. T.**, two azotoluenesulphonic acids, 1880, A., 806.
- Neale, A. T.** (and others), new fermentation of beet-root molasses, 1881, A., 770.
- Neelson, F.**, blue milk, 1881, A., 1055.
- Negri, Antonio de**, improvement of Italian tobacco by permeating the leaves with the juice of exotic tobacco, 1880, A., 200.
- Negri, Antonio de**, and **Giovanni de Negri**, indigotin in animals, or the purple of the ancients, 1876, ii., 533.
- spectroscopic method of discovering minute quantities of the vapours of hydrocarbons in a gaseous mixture, 1876, ii., 659.
- colouring matter of *Velutella limbosa*, 1877, ii., 791.
- calamine rich in indium, 1878, A., 708.
- analysis of the mineral water at Casteggio, 1878, A., 715.
- colouring matter of anguria and colocyynth, 1880, A., 267.
- Neison, Edmund** (now **Edmund Neville Nevill**), on the products of the decomposition of castor-oil. No. 1. Sebatic acid, 1874, 301. No. 2. The distillation of sodium ricinoleate, 1874, 507. No. 3. The decomposition by excess of alkaline hydrate, 1874, 837.
- Neison, Edmund** (now **Edmund Neville Nevill**), on the purification and boiling point of methylhexylcarbinol, 1875, 207.
- the sebates of the alcoholic series, 1876, i., 314.
- sebate of cobalt, 1876, i., 325.
- Neison, Edmund**, and **James Bayne**, ipomacic acid, 1874, 729.
- Neison, Edmund**. See also **Richard Vine Tuson**.
- Nemes, Georg**. See **Anton Fleischer**, **Wilhelm Hankó**.
- Neminar, Edmund P.**, analysis of chlorine from Chester in Pennsylvania, 1875, 545.
- meionite, 1876, i., 193; 1878, A., 388.
- Nencki, Leon von**, behaviour of some aromatic compounds in the animal body, 1875, 96.
- Nencki, Marcellus**, researches on the uric acid group, 1873, 282.
- dehydration in the animal body, 1873, 287.
- sulphurea, 1873, 1130.
- compounds of aldehyde, 1874, 458.
- compound of sulphurea with oxalic ether, 1874, 981, 1088.
- guanamine, 1874, 1089.
- on urinary pigments of the indigo-group and on pancreatic digestion, 1875, 479.
- guanidine derivatives; formoguanamine, 1875, 754, 1201.
- indole, 1875, 1039, 1205; 1876, i., 944.
- on the amounts of nitrogen and albumin in the milk of women and of cows, 1876, i., 90.
- vapour density of indole, 1876, i., 600.
- propylene- and isopropylene-guanamines, 1876, ii., 187.
- products of decomposition of acetone (methyle-) guanamine, 1876, ii., 188.
- constitution of the guanamines and of the polymeric cyanogen compounds, 1876, ii., 191, 509; 1877, i., 299.
- leucin, 1877, ii., 596.
- the action of monochloroacetic acid on thiocyanic acid and its salts, 1877, ii., 872.
- on the processes of decomposition, 1878, A., 525.
- note on carbaminesulphacetic acid (carbaminesulphoglycollic acid), 1878, A., 663.
- decomposition of albumin by fused potash, 1878, A., 680.

- Nencki, Marcellus**, formation of melamine from guanidine, 1878, A., 774.  
 — ethylic guanidine carbonate, 1878, A., 780.  
 — easy method of preparing trichlor-ethylidenelactic ether, 1878, A., 783.  
 — relation of oxygen to the life of the Microzoa, 1879, A., 953.  
 — empirical formula of scatole, 1880, A., 167.  
 — combinations of mono- and di-basic acids of the paraffin series with phenols, 1882, A., 1201.  
 — plastered wines, 1882, A., 1248.  
 — bases found in putrefaction products, 1882, A., 1307.
- Nencki, Marcellus**, and **Piero Giacosa**, existence of bacteria or their germs in the healthy organs of animals, 1879, A., 1046.  
 — — oxidation of aromatic hydrocarbons in the animal organism, 1881, A., 632.
- Nencki, Marcellus**, and **Wladislaus Leppert**, action of acetic anhydride on ammonium sulphocyanate, 1873, 1224.
- Nencki, Marcellus**, and **Friedrich Schaffer**, action of chloral hydrate on ammonium thiocyanate, 1879, A., 306.  
 — — chemical composition of bacteria in putrefying liquids, 1880, A., 176.
- Nencki, Marcellus**, and **(Frau) Nadina Sieber**, new synthesis of glycoeyamine, 1879, A., 70.  
 — — compounds of monobasic and dibasic acids with phenols, 1881, A., 591, 811.  
 — — decomposition of grape sugar and uric acid by alkalis, 1882, A., 378.  
 — — two new derivatives of thiocarbamide, 1882, A., 501.  
 — — physiological oxidation, 1882, A., 1307.  
 — — lactic acid in the urine in disease and oxidation of the tissues in leukaemia, 1882, A., 1309.
- Nencki, Marcellus** and **Ernst Albrecht Ziegler**, the oxidation of camphorcymene in the animal organism, 1873, 64.
- Nencki, Marcellus**. See also **Otto Schultzen**.
- Nerger, C.**, comparative manuring experiments, 1881, A., 1079.
- Nerlinger, Th.**, employment of peat as manure, 1880, A., 506.
- Nesbit, A. Anthony**, detection of chloride of lime in water, 1882, A., 1316.
- Nessler, Julius**, preparation of floor-wax, 1873, 307.
- Nessler, Julius**, brittleness of the bones in horned cattle, 1873, 924, 1244.  
 — ash of the wood of differently manured vines, 1873, 1253.  
 — sulphuric acid contained in wines, 1878, A., 347; 1882, A., 1320.  
 — pressing of red wine, 1879, A., 681.  
 — detection of free tartaric acid, and of sulphuric acid, in wine, 1879, A., 981.  
 — foreign colouring matters in red wine, 1880, A., 191.  
 — determination of wine extract, 1880, A., 515.  
 — liquid for the preservation of botanical specimens, 1880, A., 596.  
 — composition and unwholesome effects of a potato sugar, 1881, A., 332.  
 — fermentation of Italian wines, 1881, A., 1090.  
 — possibility of magenta disappearing from coloured wines, 1882, A., 347.  
 — examination of distilled waters, 1882, A., 347.  
 — treatment of wine casks, 1882, A., 431.  
 — influence of the "mare" on wine, 1882, A., 1014.  
 — preparation of essence of rennet, 1882, A., 1149.  
 — percentage of potassium carbonate and of phosphoric acid in wood ashes, 1882, A., 1313.
- Nessler, Julius**, and **Max Barth**, analysis of wine, 1882, A., 999, 1235.
- Nessler, Julius**, and **H. Wachter**, free tartaric acid in wine, 1880, A., 775.
- Neubauer, Carl Theodor Ludwig**, pressure of the sap in the vine, 1873, 293.  
 — qualitative analysis of vine leaves, 1873, 933.  
 — detection of traces of arsenic and phosphorus in toxicological researches, 1873, 943.  
 — on the power of salicylic acid to arrest fermentation, 1875, 459.  
 — preparation of chemically pure grape sugar, 1877, i., 705.  
 — optical behaviour of wines, etc., 1877, ii., 521.  
 — determination of dextrose and levulose by an indirect method, 1877, ii., 641.  
 — concentration of wine-must by cold, 1877, ii., 793.  
 — detection of wines adulterated with grape sugar, 1877, ii., 939; 1879, A., 82.
- Neubauer, Carl Theodor Ludwig**, and **Eugen Borgmann**, estimation of glycerin in wine, 1879, A., 404.

- Neuhöffer, Georg, and Gustav Theodor August Otto Schultz**, action of amines on chlorinated quinones, 1878, A., 62.
- Neumeister, Richard**, bromodichloroacetic acid and chlorodibromoacetic acid, 1882, A., 943.
- Neumeister, Richard**. See also *Oscar Georg Jacobsen*.
- Neville, Ralph H. Ch.**, a compound of chromium and arsenic, 1877, i., 283.
- Neville, Ralph H. Ch., and Adolf Winter**, on the influence of the amido-group on the orientation of bromine or  $\text{NO}_2$  in the benzene nucleus, as illustrated by the preparation of the six possible dibromotoluenes, the six possible tribromotoluenes, the three possible tetrabromotoluenes, and various other bromo- and bromonitro-derivatives of toluene, 1880, T., 129.
- on the formation of amido-sulphonic acids by the action of concentrated sulphuric acid, 1880, T., 625.
- on the position taken by the nitro-group on nitrating the dibromotoluenes, 1881, T., 83.
- on some derivatives of toluene and the toluidines, 1881, T., 84.
- on orcinol and some of the other dihydroxytoluenes, 1882, T., 415.
- Nevill**. See *Neison*.
- Nevolé, Milan**, two isomeric butenes obtained by the action of zinc chloride on butylic alcohol from fermentation, 1876, i., 59.
- a new butyl glycol, 1876, ii., 621.
- action of water on glycols, 1877, i., 58.
- derivatives of ethylvinyl, 1877, ii., 867.
- Nevolé, Milan, and Joseph Tcherniac**, on ethylene cyanide, 1878, A., 964.
- Newbury, Spencer Baird**, preparation of crotonaldehyde, 1881, A., 405.
- Newlands, Benjamin Edward Reina**. See *James Duncan*.
- Newlands, John Alexander Reina**. See *James Duncan*.
- Ney, O.**, influence of light on beer, 1880, A., 200.
- Neyreneuf, F.**, action of electricity on flames, liquids, and powders, 1873, 339, 1093.
- action of electricity on gases, 1874, 757.
- on stratified light, 1875, 412.
- specific inductive capacity, 1878, A., 104.
- flow of gases and properties of flames, 1882, A., 568.
- Niaudet-Breguet, Alfred**, new galvanic couple, 1880, A., 119.
- sound of the electric arc, 1881, A., 959.
- Nichols, Edward Leamington**, electrical resistance and coefficient of expansion of incandescent platinum, 1882, A., 354.
- Nichols, Edward Leamington**. See also *John James Mackenzie*.
- Nichols, William Ripley**, deterioration of library bindings, 1880, A., 836.
- Nicholson, Edward**, the earth salts of Bellary (India), 1873, 151.
- analysis of the water of the river Mahanuddy, 1873, 229.
- volumetric estimation of carbon dioxide by a modification of Scheibler's apparatus, 1874, 914.
- on the estimation of nitrites in water, 1876, i., 744.
- Nickels, Benjamin**, use of the polariscope in testing crude anthraquinone for anthracene, 1880, A., 292.
- use of the spectroscope in discriminating anthracenes, 1880, A., 757.
- detection of cotton-seed oil in olive oil, 1880, A., 925.
- removal of carbon bisulphide from commercial benzene, 1881, A., 770, 950.
- Nicol, Carl**, estimation of anthracene in coal tar, 1876, ii., 553.
- Nicol, William Walker James**, action of potassium sulphide on chloroform, 1882, A., 589.
- action of heat on thioformanilide, 1882, A., 611, 958.
- Niederhäusern, Heinrich von**, aromatic ethers, 1882, A., 1211.
- Niederist, Gustav**, action of water on the haloid compounds of the alcohol radicles, 1877, ii., 422; 1879, A., 700.
- Niederstadt, B. C.**, Estremadura phosphorite, 1874, 346.
- dry distillation of peat, 1874, 498.
- a vegetable colouring matter, 1876, ii., 206.
- guano from the island of Ichaboe, 1880, A., 506.
- on explosives for blasting, especially nitroglycerin, 1880, A., 595.
- analysis of Hamburg beer, 1880, A., 833.
- Niedzwiedzki, Julian**, conversion of garnet into chlorite, 1873, 855.
- the eruptive rocks of the Banat, 1874, 881.
- Nienhaus, Cassimir**, reaction of alizarin with nitrous acid, 1876, ii., 84.
- Nies, August**, strengite, a new mineral, 1877, ii., 410.

- Nies**, *August*, two new minerals from the Eleonora mine in the Dönsberg near Giessen, 1881, A., 525.
- Nies**, *Friedrich*, a cobaltiferous magnesium sulphate, 1873, 1114.
- aphrosiderite, 1873, 1115; 1875, 1166.
- Nies**, *Friedrich*, and *Adolph August Winkelmann*, changes in volume of some metals on fusion, 1881, A., 783.
- Nietzki**, *Rudolf*, dill oil, 1874, 892.
- essential oil of the root of *Spiraea Ulmaria*, 1871, 897.
- preparation of thallium, 1876, i., 882.
- on aniline-black, 1876, ii., 310; 1877, i., 91; 1878, A., 791.
- presence of sulphocyanates in commercial soda, 1877, i., 353.
- a new glucoside in the flowers of *Cichorium Intybus*, 1877, i., 477.
- behaviour of aniline derivatives when passed through red hot tubes, 1877, ii., 447.
- azidoazo-compounds of the tolyl series, 1877, ii., 453, 767.
- *p*-diamidotoluene and toluquinone, 1877, ii., 175.
- constitution of quinhydrone, 1878, A., 146; 1880, A., 247.
- methylquinizarin, 1878, A., 154.
- preparation of quinones and hydroquinones, 1878, A., 315.
- nitranilic acid, 1878, A., 425.
- derivatives of quinol (*hydroquinone*), 1878, A., 499, 866; 1879, A., 464.
- preparation of quinone, 1878, A., 794.
- derivatives of hydrotoluquinone, 1878, A., 868.
- tolylenediannines, 1880, A., 162.
- xylene derivatives, 1880, A., 552.
- colouring matters obtained by the action of naphthol on diazoazobenzene, 1880, A., 664.
- "Biebrich scarlet," 1881, A., 178.
- naphthylsulphuric acid, 1882, A., 736.
- Nikolsky**, *Woldemar*. See *Alexander M. Saytzeff*.
- Nilson**, *Lars Fredrik*, researches on the selenites, 1875, 420, 865, 1238.
- the quantivalence of the metals of the rarer earths, 1875, 1001; 1876, ii., 381; 1877, i., 49.
- on the sulphides of arsenic and their compounds, 1876, i., 343; ii., 480.
- platonitrites and diplatonitrites, 1877, ii., 115; 1878, A., 274.
- chloroplatinites, 1877, ii., 277.
- action of iodine and alcohol on the platinonitrites, 1877, ii., 710.
- Nilson**, *Lars Fredrik*, a new platino-nitrosic acid, 1877, ii., 711.
- separation of arsenic from antimony by Bunsen's method, 1877, ii., 922; 1879, A., 1058.
- barium oxysulpharsenite, 1878, A., 13.
- plato-jodo-nitrites, 1878, A., 706.
- ytterbia, 1879, A., 601; 1880, A., 703.
- scandium, 1879, A., 601; 1880, A., 850.
- Nilson**, *Lars Fredrik*, and *Otto Pettersson*, specific heat and atomic weight of glucinum, 1878, A., 556; 1880, A., 792, 850; 1881, A., 140.
- molecular heats and molecular volumes of the rare earths and their salts, 1880, A., 838; 1881, A., 491.
- properties and chemical characters of glucinum, 1881, A., 511.
- Ninger**, *Fr.*, influence of frost on analyses of sugar beets, 1881, A., 1084.
- Nitsche**, *Franz*, saponification of neutral fats in autoclaves, 1876, ii., 451.
- Nitzkowski** (and others), potato culture, 1882, A., 766.
- Nivet**, reactions between calcium carbonate and ammoniacal salts, 1880, A., 700.
- Nivet**. See also *H. Léizour*.
- Nivoit**, *Edmond*, the calcium phosphates of Ciply in Belgium, 1874, 1146.
- Noack**, manuring fruit trees, 1882, A., 93.
- Nobbe**, *Friedrich*, germination of fir seeds, 1881, A., 931.
- cultivation of cock's foot grass (*Dactylis glomerata*) in Saxony, 1882, A., 422.
- influence of light on the germination of grass seeds, 1882, A., 882.
- examination of a mixture of weed seeds used as fodder, 1882, A., 1226.
- Noble**, (*Sir*) *Andrew*, and (*Sir*) *Frederick Augustus Abel*, combustion of gunpowder, 1879, A., 992.
- note on the existence of potassium thiosulphate in the solid residue of fired gunpowder, 1881, A., 977.
- Noel**, *G.*, action of light on silver bromide, 1881, A., 862.
- Nörling**, *Emilio*, aromatic sulphonic acids, 1875, 264; 1876, i., 928.
- bromobenzenesulphonic acid, 1875, 895.
- constitution of benzenesulphonic acids, 1876, i., 81.
- the conversion of benzenesulphonic acids into benzenecarbonic acids, 1876, i., 394.



- Nölting, Emilio**, laws of substitution in benzene, 1877, ii., 324.
- Nölting, Emilio**, and **J. Bouss Boasson**, monomethylaniline, 1877, ii., 755.
- — — researches on the aromatic amines, 1877, ii., 885.
- Nölting, Emilio**, and **Emmanuel von Salis**, nitroresols, 1881, A., 725.
- Nölting, Emilio**. See also **Wladislaus Peter Klobukowski**, **Prosper Monnet**, **Frédéric Reverdin**, **Casimir Wurster**.
- Noerdlinger, Isaac David**, sap of trees and specific gravity of their wood, 1880, A., 912.
- — — hardness and resistance of wood, 1881, A., 132.
- Nolte, R.**, estimation of chlorine in grain and in forage, 1880, A., 285.
- Norblad, J. A.**, apparatus for producing constant and long continued gas streams, 1874, 765.
- Nord, A.**, cultivation of some kinds of French sugar beets, 1882, A., 243.
- — — purification of beet juice by lime, 1882, A., 672.
- Nordenskiöld, Nils Adolf Erik (Baron) von**, nollite from Nohl in Sweden, 1873, 479.
- — — influence of crystallisation water on crystalline form, 1874, 759.
- — — the crystalline form of cerite, 1874, 778.
- — — cosmic dust, 1874, 1148.
- — — crystallographical and chemical investigation of some minerals containing fluorine from Ivituk, Greenland, 1876, ii., 384.
- — — mineralogical notes, 1878, A., 279; 1879, A., 364.
- — — some minerals from Långban, 1879, A., 21.
- — — new species of mineral, thaumasite, 1879, A., 21; 1881, A., 1000.
- — — two remarkable meteors observed in Sweden, 1880, A., 859.
- Nordenström, Olof Gustaf**, occurrence of anthracite in an iron mine in Norberg, Sweden, 1881, A., 359.
- Nordström, Theodor**, vanadite, 1880, A., 15.
- — — analyses of minerals, 1881, A., 532.
- Norton, Lewis Mills**, and **James P. Elliott**, action of ammonium sulphide on picramide, 1878, A., 417.
- Norton, Lewis Mills**. See also **Arthur Michael**.
- Norton, Thomas Herbert**, and **Joseph Tcherniac**, glycolide, 1878, A., 775.
- — — ethoxyacetoneitrile, 1878, A., 971.
- Norton, Thomas Herbert**, and **Joseph Tcherniac**, new method of preparing ethyl glycolate, 1878, A., 971.
- — — monochloroethylacetamide, 1878, A., 972.
- Norton, Thomas Herbert**. See also **William Francis Hillebrand**, **Arthur Michael**.
- Nowak, Josef**, chloroform as a solvent and means of separation for vegetable poisons in forensic investigations, 1873, 412, 535.
- — — estimation of urea by means of mercurous nitrate, 1874, 497.
- Nowak, Josef**, and **Florian Kratschmer**, phosphoric acid as a test for alkaloids, 1874, 1018.
- Nowak, Josef**. See also **Josef Seegen**.
- Noyes, William Albert**. See also **Ira Remsen**.
- Nussbaum, Moritz**, continuation of researches on respiration in the lungs, 1873, 929.
- — — narcosis produced by nitrous oxide, 1874, 996.

## O.

- Obach, Eugen**, action of the electric current on fused amalgams and alloys, 1876, ii., 37.
- Oberlin, Léon**, note on apomorphine, 1876, i., 274.
- Oberlin, Léon**, and **Charles Frédéric Schlagdenhauffen**, on the essential oil of angustura bark, 1877, ii., 932.
- — — alkaloids of *Alstonia constricta*, 1880, A., 127.
- — — the mineral water of Schinznach, 1882, A., 589, 932.
- Obermayer, Albert von**, appearances presented by a solution of aniline colours spreading on water, 1874, 1044.
- Ochsenius, Carl**, glauberite, 1874, 547.
- Odermatt, Wilhelm**, formation of phenol from putrefying albuminoid matter, 1879, A., 1038.
- Odling, William**, formulation of the paraffins and their derivatives, 1876, ii., 279.
- Oebbecke, Konrad**, a contribution to our knowledge of paleopierite and its products of decomposition, 1878, A., 477.
- — — contributions to the petrology of the Philippine and Palau Islands, 1882, A., 1034.
- Oberg, P. W.**, the enkrite of the Rådmons Island in Upland, 1874, 347.

- Oechsner de Coninck, William**, a secondary hexylalcohol, 1876, i., 694.  
 — hydrogenation of ethyl propyl ketone, 1876, ii., 67.  
 — pyridine bases, 1881, A., 56, 113; 1882, A., 1302.  
 — preparation of ethylvinyl hydrocyanide, 1881, A., 239.  
 — dimethylresorcinol, 1881, A., 269.  
 — lutidine aurochloride, 1881, A., 288.  
 — fractional distillation of crude quinoline; oxidation products of lutidine, 1881, A., 612.  
 — distillation of cinchonine with potash, 1882, A., 414.
- Oechsner de Coninck, William**, and **Jean Albert Pabst**, action of ammonia on acetone, 1874, 789.
- Oeconomidés, Spiridon**, action of phosphorus pentachloride on isobutaldehyde, 1881, A., 709.  
 — preparation of isobutylal, 1881, A., 711.  
 — action of ammonia on isobutylidene chloride, 1881, A., 793.  
 — action of hydrochloric acid gas on isobutaldehyde, 1882, A., 32.  
 — compound obtained in the preparation of isobutylal, 1882, A., 32.
- Oeconomidés, Spiridon**. See also **Maurice Hanriot**.
- Oehler, H.** See **Adolph Claus**.
- Oehme** (and others), successful growth of flax in Saxony, 1881, A., 60.
- Oehmichen, Paul**. See **Richard Möhlau**.
- Oellacher, Josef**, oellacherite, 1874, 553.
- Oemler, and E. Fuchs**, produce of meadows laid down on Petersen's system, and their feeding value compared with that of natural meadows, 1875, 180.
- Oertmann, Ernst**. See **Dittmar Finkler**.
- Orum, H. P.**, and **Ditzel**, nutritive value of gelatin, 1881, A., 1049.
- Oettingen, Arthur Joachim von**, spectrum of the Aurora Borealis, 1873, 242.
- Offer, Heinrich**, Guthrie's cryohydrates, 1881, A., 216.
- Ogier, Jules**, on a new sulphate of potassium, 1876, ii., 275.  
 — preparation of iodine trioxide, 1878, A., 11.  
 — action of ozone on iodine, 1878, A., 469.  
 — measurement of the heat developed in the formation of hydrogen phosphides and arsenides, 1879, A., 5.  
 — liquefaction of silicon hydride, 1879, A., 436.
- Ogier, Jules**, thermic formation of silicon hydride, 1879, A., 767.  
 — thermic researches on silicic ether, 1879, A., 767.  
 — combinations of phosphine with the haloid acids, 1880, A., 150.  
 — a new hydride of silicon, 1880, A., 298.  
 — thermochemistry of the bromides and iodides of phosphorus, 1881, A., 218.  
 — chloride, bromide, and iodide of sulphur, 1881, A., 673.  
 — sulphur oxychlorides, 1882, A., 463.  
 — density of the vapour of pyrosulphuryl chloride, 1882, A., 694.  
 — a new sulphur oxychloride, 1882, A., 694.
- Ogier, Jules**. See also **Marcet Berthelot**.
- Ogilvie, Thomas Robertson**, chemical examination and comparative composition of some specimens of preserved meat, 1874, 1018.  
 — estimation of phosphoric acid as ammonio-magnesian phosphate, 1875, 1289.
- Oglialoro-Todaro, Agostino**, action of bromine on anhydrous chloral, 1875, 877.  
 — action of chlorine on allyl alcohol, 1875, 878.  
 — essence of cubeb, 1876, ii., 642.  
 — phenylcinnamic acid, 1879, A., 640.  
 — preliminary notice on *Tecurium fraticans*, 1879, A., 728.  
 — characteristic reactions of picrotoxin and of some of its derivatives, 1879, A., 748.  
 — synthesis of phenylcoumarin, 1880, A., 164.  
 — *p*-methoxyphenylcinnamic acid and methoxystilbene, 1880, A., 253.  
 — phenoxycinnamic acid, 1881, A., 276.
- Oglialoro-Todaro, Agostino**. See also **Emanuele Paternò**.
- Ogloblin, W.**, commercial petroleum, 1881, A., 330.
- Oglobin, W.** See also **Wladimir B. Markownikoff**.
- Ohl, Wilhelm**, electrolytic estimation of cobalt, nickel, and copper, 1880, A., 583.
- Ohm, Bertram**, observations on milk, 1880, A., 828.
- O'Keeffe, Cornelius**. See **Maxwell Simpson**.
- Okulitsh**. See **Alexander A. Werigo**.

- Oliveri, Vincenzo**, *p*-xyleneol, 1882, A., 837.  
 ——— dioxylene and its products of oxidation, 1882, A., 853.
- Oliveri, Vincenzo**. See also *Emanuele Paternò*.
- Olivier, J.**, a curious method of producing heat, 1877, ii., 274.
- O'Neill, Edmond Charles**. See *John Maeson Stillman*.
- Onimus, Ernest Nicolas Joseph**, influence of albuminoid substances upon electro-capillary phenomena, 1874, 528.  
 ——— easily prepared galvanic cells, 1876, ii., 267.
- Opl, Carl**, chloride of lime and its spontaneous decomposition, 1876, i., 39.
- Oppenau, Franz von**, stripping of maize, 1881, A., 837.
- Oppenheim, Franz**. See *Otto Wallach*.
- Oppenheim, Friedrich Ludwig Alphon**, action of phosphorus on alkaline solutions of metals, 1873, 244.  
 ——— ethers of pyroracemic acid, 1873, 377.  
 ——— oil of lemon, 1873, 1226.
- Oppenheim, Friedrich Ludwig Alphon**, and *von Czarnomsky*, compound of benzamide with mercuric oxide, 1874, 272.
- Oppenheim, Friedrich Ludwig Alphon**, and *Siegfried Pfaff*, mercuramides, 1874, 891.  
 ——— contributions to our knowledge of the terpenes, 1874, 891.  
 ——— action of chloroform on sodacetie ether, 1874, 1161.  
 ——— oxyuvitic acid and its cresol, 1875, 1261.  
 ——— melting points of anisic acid, 1875, 1263.
- Oppenheim, Friedrich Ludwig Alphon**, and *Heinrich Precht*, decomposition of ethyl acetate by heat, 1876, ii., 63.  
 ——— formation of ethyldiacetic acid and oxyuvitic acid, 1876, ii., 69.  
 ——— preparation and properties of dehydracetic acid, 1876, ii., 69.  
 ——— action of aniline on ethyl acetoacetate, 1876, ii., 505.  
 ——— derivatives of dehydracetic acid, 1876, ii., 506.
- Oppenheim, Friedrich Ludwig Alphon**, and *Maximilian Salzmann*, boiling point of glycerin, 1875, 442.
- Oppenheim, Friedrich Ludwig Alphon**. See also *Oscar Emmerling*, *Robert Hellon*, *Charles Loring Jackson*.
- Oppenheim, Hermann**, influence of the supply of water, the secretion of sweat, and muscular labour on the elimination of nitrogenous decomposition products, 1880, A., 818.
- Oppenheim, Hermann**, physiology and pathology of the elimination of urea, 1882, A., 542.  
 ——— influence of muscular work on the elimination of sugar and urea in diabetes, 1882, A., 755.
- Oppenheim, Hermann**, and *Juques Mayer*, elimination of urea, 1882, A., 238.
- Oppermann, Julius**. See *Ferdinand Tiemann*.
- Oré, Pierre Cyprien**, on the influence of metaphosphoric and orthophosphoric acids on the coagulation of the blood, 1876, i., 725.
- Orlowski, Anton L.**, new apparatus for the evolution of chlorine, 1873, 96.  
 ——— action of silver cyanide on dibromethyl bromide, 1877, ii., 869.  
 ——— action of bromine on succinic acid, 1877, ii., 883.  
 ——— ethenyltricarboxic acid, 1877, ii., 883; 1878, A., 30.  
 ——— detection of cadmium in presence of copper, 1882, A., 1232.  
 ——— detection of cuprous in presence of cupric and other metallic oxides, 1882, A., 1232.
- Orlowsky, Marjan von** (pseudonym for *Marja Mazurowska*), action of chlorhydrosulphuric acid on alcohols, 1875, 875.  
 ——— sulphuric ethers, 1876, ii., 61.
- Orrmann, Hjalmar**. See *Karl Kraut*.
- Orth, Albert**, the fundamental scientific principles of geognosy, 1877, ii., 214.  
 ——— absorption of ammonium nitrogen by soils and subsoils, 1878, A., 1002.  
 ——— constancy and variation in the composition of the soil, 1879, A., 666.  
 ——— absorption of ammonia by the soil, 1880, A., 737.
- Orth, Albert**. See also *W. Lauche*.
- Orth, Heinrich**, dinitrobenzyl alcohol, 1882, A., 1198.  
 ——— nitro-*m*-cresols, 1882, A., 1198.  
 ——— benzyl-*m*-cresyl oxide, 1882, A., 1204.
- Oser, Johann**, on the tannic acid of the oak, 1876, ii., 88.
- Oser, Johann**, and *Franz Bocker*, condensation products of gallic acid, 1880, A., 394.
- Oser, Johann**, and *Gregor Flogl*, a new condensation product of gallic acid, 1876, i., 926.

- Oser, *Johann*, and *Wilhelm Kalmann*, a new derivative of gallic acid, 1881, A., 815.
- O'Shea, *Lucius Trant*. See *Thomas Carnelley*.
- Osmond, *Floris*. See *Georges Witz*.
- Osse, *Otto*, the quantitative determination of essential oils, 1876, i., 759.
- Ossikowsky, *Joseph*, formation of cinnamic aldehyde during fibrin-pancreas digestion, 1880, A., 469.
- constitution of tyrosin and scatole, 1880, A., 473.
- arsenious sulphide as a poison, and its importance in judicial cases, 1881, A., 123.
- OSSIPOFF, *Ivan P.*, amyl alcohols from anylene and sulphuric acid, 1875, 877; 1876, i., 544.
- halogen derivatives of fumaric and maleic acids, 1881, A., 416.
- Ost, *Hermann*, behaviour of chloro-salicylic, salicylic, and *p*-oxybenzoic acids to melting alkalis, 1876, i., 252.
- action of sodium hydrate on tyrosin, 1876, i., 577.
- synthesis of polybasic acids by means of salicylic acid and carbon dioxide, 1876, ii., 521.
- polybasic acids derived from phenol and carbon dioxide, 1877, ii., 485.
- solubility of the three oxybenzoic acids and of benzoic acid in water, 1878, A., 796.
- phenoldicarbonic acids and oxytrimelic acid, 1878, A., 796.
- pyromeconic acid, 1879, A., 307, 708.
- formation of *p*-hydroxybenzoic acid from sodium phenate, 1880, A., 43.
- meconic acid, 1882, A., 601.
- Osten, *A.*, derivatives of diphenyl, 1874, 580.
- Oster, *J. B.*, testing hydrochloric acid for arsenic, 1873, 943.
- examination of milk, 1874 717.
- a voltaic cell, 1882, A., 258.
- Osterland, *Carl*, derivatives of malonic acid, 1875, 142.
- Osterland, *Carl*, and *Paul Wagner*, composition of ashes from Vesuvius, 1873, 1011.
- Ostermaier, *Hermann*. See *Paul Friedländer*.
- Ostermayer, *Eugen*. See *Rudolph Fittig*.
- Ostwald, *Wilhelm*, chemical volumes, 1878, A., 196.
- chemical affinity, 1879, A., 348; 1881, A., 17, 783; 1882, A., 360.
- volumetric determination of the chemical influence of mass; on the mass-influence of water, 1881, A., 497.
- Ostwald, *Wilhelm*, calorimetric studies, 1882, A., 451.
- O'Sullivan, *Cornelius*, maltose, 1876, i., 478.
- action of malt extract on starch, 1876, ii., 125.
- on the transformation products of starch, 1879, T., 770.
- $\alpha$ - and  $\beta$ -amylan: constituents of some cereals, 1882, T., 24.
- Ott, *Adolf*, on the preparation of paper for pigment or carbon photography, 1879, A., 560.
- heliographic printing, 1879, A., 750.
- photolithography, 1879, A., 836.
- Ott, *Adolf* (Prague), influence of sodium and calcium carbonates on the proteid metabolism of the body, 1882, A., 750.
- Ott, *Adolph*, utilisation of tin plate cuttings, 1873, 308.
- flavin, 1873, 643, 959.
- the treatment of wine with air during fermentation, 1873, 660.
- fire resisting qualities of various building stones, 1873, 660.
- Loew's apparatus for the industrial preparation of ozone, 1875, 108.
- preparation of artificial alizarin, 1875, 197.
- the new dyes of Croissant and Bretonnière, 1875, 300.
- the refining of crude petroleum, 1877, ii., 376.
- Otto, competitive cultivation of grass seeds, 1879, A., 824.
- Otto, *Georg G.*, preparation of grape sugar and its titration with Kuapp's solution, 1882, A., 1276.
- Otto, *Robert*, a new source of struvite, 1873, 1107.
- preparation of benzene hydro-sulphide from benzenesulphinic acid: new method of converting benzene disulphide into benzene hydrosulphide, 1877, ii., 749.
- sulphonic acids derived from sulphones, 1879, A., 649.
- preparation of sulphuretted hydrogen for chemico-legal investigations, 1879, A., 671.
- constitution of sulphotoluide, 1879, A., 926.
- behaviour of mercury and lead ethylmercaptides at high temperatures, 1880, A., 796.
- action of sulphuric acid on aromatic sulphydrates, 1880, A., 810.
- Beckurts' toluene-*m*-sulphonic acid, 1880, A., 810.
- constitution of the sulphinic acids, 1880, A., 810.



- Otto, Robert**, synthesis of ethereal salts of thiosulphonates, 1880, A., 812.  
 — detection of zinc in toxicological cases, 1881, A., 194.  
 — synthesis of the so-called alkyl disulphoxides, 1882, A., 831.
- Otto, Robert**, and **Heinrich Beckurts**, constitution of glyoxylic acid, 1881, A., 1030.
- Otto, Robert**, and **Georg Gaebler**, comparative examination of samples of magnesium carbonate, 1881, A., 208.
- Otto, Robert**, and **Albert Knoll**, action of sulphuric monochloride on sulphobenzide, 1879, A., 243.
- Otto, Robert**, and **Rudolf Lüders**, benzyl derivatives containing sulphur, 1880, A., 811.
- Otto, Robert**. See also **Heinrich Beckurts**, **Conrad Pauly**, **Rudolf Schiller**.
- Oudemans, Anthonie Cornelis, junior**, solubility estimations in general, and solubility of cinchonine in alcohol, chloroform, and mixtures of the two, 1873, 410.  
 — drying chamber with mica walls, 1873, 412.  
 — influence of inactive solvents on the specific rotatory power of active substances, 1873, 461.  
 — estimation of alcohol in commercial chloroform, 1873, 533, 1059.  
 — podocarpic acid, 1874, 72.  
 — the constitution of podocarpic acid, 1874, 73.  
 — a new quinine hydrate, 1874, 168.  
 — the milky juice of *Plumieria acutifolia* and plumieric acid, 1876, ii., 421.  
 — quinamine, 1879, A., 1044.  
 — conquinamine, 1881, A., 1154.
- Owens, (Miss) Mary Elizabeth (Mrs. Hooker)**. See **Frank Wigglesworth Clarke**.
- P.**
- Paalzow, Carl Adolph**, the oxygen spectrum and luminous appearances of rarefied gases in tubes with liquid electrodes, 1879, A., 861.
- Pabst, Jean Albert**, preparation of ethyl acetate, 1880, A., 541.
- Pabst, Jean Albert**. See also **Adam Charles Girard**, **William Oechsner de Coninck**.
- Pabst, Wilhelm**, examination of Chinese and Japanese rocks used for the manufacture of porcelain, 1882, A., 483.
- Packer, George Smithers**, estimation of carbon in cast iron, 1874, 495.
- Pätow**, sowing broadcast or on drills, 1880, A., 922.  
 — best method of manuring potatoes, 1881, A., 61.
- Pätz, C.**, removal of iron from newly broken soil, 1881, A., 638.
- Page, Frederick James Montague**, a simple form of gas regulator for maintaining a constant temperature in air-baths, water-baths, incubators, etc., 1876, i., 24.
- Page, W. T.**, examination of livingstonite from a new Mexican locality, 1881, A., 517.  
 — examination of an altered livingstonite from Guadalcázar, S. Luis Potosi, Mexico, 1881, A., 517.  
 — analysis of a highly aluminous pyroxene from Amhurst Co., Virginia, 1881, A., 554.  
 — solubility of carbon bisulphide in water, 1881, A., 580.
- Pagel, A.**, fermentation of Norwegian fish guano, and steamed bone meal, 1878, A., 163.
- Pagel, F. A.**, *o*-toluidinesulphonic acid, 1875, 897.  
 — nitrodiazo-compound of *p*-amido-toluenesulphonic acid, 1875, 899.
- Pagenstecher, Alexander**. See **Rudolph Fittig**.
- Pagliani, Stefano**, bye-products obtained in the preparation of aldehydes by Piria's method, 1878, A., 287, 653.  
 — action of sulphurous anhydride on alcohols, 1878, A., 654.  
 — naphthylcarbamides, 1879, A., 723.  
 — reaction of salicylic acid with ferric salts, 1879, A., 748.
- Pagliani, Stefano**. See also **Andrea Naccari**.
- Pagnoul, Aimé**, effect of alkaline salts on the growth of beetroot and the potato, 1875, 908.  
 — formation of nitrates in sugar beets, 1880, A., 494.  
 — cultivation of beetroot, 1881, A., 60.
- Pahl, C. N.**, pyrophosphates, 1874, 338, 774.
- Paijkull, S. R.**, zirconium compounds, 1873, 1105; 1880, A., 6.  
 — ranite, 1875, 239.  
 — homilite, a mineral from Brevig, Norway, 1878, A., 278.  
 — mineralogical notices, 1879, A., 31.
- Palm, Fr.**,  $\beta$ -naphthylamine, 1876, ii., 206.



- Palmer, *Alfred Neobard*, determination of quinine in presence of other substances, and especially in ferro-quinic sulphate, 1876, ii., 664.
- Palmer, *Alice W.* See (Mrs.) *Ellen H. Swallow Richards*.
- Palmer, *Chase Skeele*, sulphocinnamic acids, 1882, A., 1204.
- Palmer, *Chase Skeele*. See also *Ira Remsen*.
- Palmeri, *Paride*, chemical examination of twelve colours found at Pompeii, 1877, i., 111.
- Palmieri, *Giuseppe*, reducing action of glycerol on silver salts, and its application to silvering glass, 1882, A., 1256.
- Pander, *Christ. Heintz*, action of brucine, emetine, and physostigmine on the organism, 1873, 79.
- detection of brucine, emetine, and physostigmine, 1873, 93.
- Panebianco, *Ruggiero*, dimorphism of 1:4-acetotoluide, 1879, A., 626.
- crystalline form of some aromatic compounds, 1880, A., 105.
- crystalline form of nitrosothymol, lapachic acid, and eumic acid, 1880, A., 548.
- crystalline forms of manganese tartronate and of tartronic acid, 1882, A., 1187.
- Panebianco, *Ruggiero*. See also *Francesco Mauro*.
- Panek, *Ul.* See *Carl Arnold August Michaelis*.
- Papasogli, *Giorgio*, action of aldehydes on naphthylamine bisulphite, 1874, 274.
- researches on essence of turpentine, 1877, i., 592.
- detection of cobalt and nickel in presence of each other, 1880, A., 286.
- action of carbonic acid on potassium iodide and on ozonoscopic papers, 1881, A., 975.
- Papasogli, *Giorgio*, and *Aser Poli*, chromic acid a test for malic acid, 1877, ii., 807.
- Papasogli, *Giorgio*. See also *Adolfo Bartoli*.
- Pape, *Carl*, silico-propyl compounds, 1882, A., 154.
- Pape, *O.*, some reactions of vegetable poisons, 1877, i., 749.
- Papillon, *Fernand*, experimental modifications of the compositions of bones, 1873, 518.
- Papillon, *Fernand*. See also *Antoine Pierre Athanase Rabuteau*.
- Paquelin, and *Léopold Jolly*, condition of the iron in blood, 1874, 996.
- — the colouring matter of blood (*hematin*) does not contain iron, 1875, 279.
- — physiological action of the hyposulphites, 1878, A., 994.
- Paquet, *E.*, new densimeter, 1876, i., 37.
- Parcus, *Eugen*, some new constituents of the brain, 1882, A., 235.
- Parker, *Andrew J.* See *William H. Greene*.
- Parker, *J. Spear*, varying condition of carbon in steel, and its influence on Eggertz's coloration process, 1881, A., 466.
- Parker, *Robert Henry*, action of potassium chlorate on ferrous iodide, 1880, A., 704.
- estimation of ferrous iodide, 1880, A., 749.
- salicin, 1882, A., 303.
- Parmentier, *F.*, silicomolybdic acid and its salts, 1881, A., 880; 1882, A., 702.
- Parnell, *Edward Andrew*, observations on the use of permanganate of potash in volumetric analysis, and on the estimation of iron in iron ores, 1875, 27.
- metallurgic treatment of complex ores containing zinc, 1881, A., 668.
- Parnell, *Edward William*, on the estimation of phosphoric acid, 1876, i., 745.
- Parodi, *Domingo*, tayuya, 1880, A., 721.
- Parodi, *Giuseppe*, and *Anton Mascazzini*, estimation of zinc and lead in minerals, 1877, ii., 804.
- Parodi, *Giuseppe*. See also *Anton Mascazzini*.
- Parreno, *A. Garcia*, volumetric estimation of manganese, 1877, ii., 924.
- Parrisius, *Adolf*. See *Ferdinand Tiemann*.
- Parry, *George*, obituary notice of, 1877, i., 507.
- Parry, *John*, reduction of pure anhydrous ferric oxide with pure carbon *in vacuo*, 1873, 1006.
- estimation of manganese in spiegel-eisen, 1874, 712.
- Parsons, *Henry B.*, proximate analysis of plants, 1880, A., 754.
- analysis of damiana, 1881, A., 106.
- aconitic acid in the scale from sorghum sugar pans, 1882, A., 766.
- analysis of corn ergot or corn smut (*Ustilago maydis*), 1882, A., 785.
- examination of the root of *Berberis Aquifolium*, *v. repens*, "Oregon grape root," 1882, A., 1140.

- Paschutin, Victor**, separation of digesting ferments, 1873, 1064.  
 — butyric fermentation, 1874, 279.
- Pasqualini, Cav. Alessandro**, effect of gypsum on the quantity and quality of clover crops, 1880, A., 185.
- Passavant, (Miss) Laura Maude**, on the specific volume of chloral, 1881, T., 53.
- Passavant, S. C.** See **Emil Erlenmeyer**.
- Pasteur, Louis**, new experiments demonstrating that wine-producing yeast germs are not formed within the grape, 1873, 82.  
 — reply to Fremy's paper on the "generation of ferments," 1873, 82.  
 — theory of fermentation, 1873, 83, 294; 1878, A., 995.  
 — improvement of wines by heating, 1873, 99.  
 — production of alcohol by fruits, 1873, 293.  
 — new process for brewing, 1873, 958.  
 — manufacture of unalterable beer, 1874, 299.  
 — observations on dissymmetric natural forces, 1874, 950.  
 — on a distinction between natural and artificial organic products, 1875, 1269.  
 — note on Durin's paper on cellulosic fermentation of cane sugar, 1876, ii., 541.  
 — on the fermentation of fruits and the diffusion of the germs of alcoholic ferments, 1876, ii., 541.  
 — note on the alteration of urine, with reference to Dr. Bastian's paper, 1876, ii., 542.  
 — note on Weddell's paper on the substitution of cinchonidine for quinine, 1877, ii., 344.  
 — supposed action of hops on a ferment, 1877, ii., 352.  
 — chicken cholera, 1882, A., 324.
- Pasteur, Louis**, and **Jules Joubert**, on the fermentation of urine, 1876, ii., 543.
- Pasteur, Louis** (and others), on the origin and prevention of splenic fever, 1882, A., 323.
- Pastrovich, Peter**, artificially coloured red wines, 1882, A., 1138.
- Pastrovich, Peter**. See also **Carl Leonhard Heinrich Schwarz**.
- Patera, Adolf**, salt manufacture, 1873, 413.  
 — fire clays from Carniola, 1873, 952.  
 — obtaining vanadium from the uranium ore of Joachimsthal, 1879, A., 989.
- Paternò, Emanuele**, new mode of synthesis of acids of the aromatic series, 1873, 635.  
 — identity of the cymenes from camphor and oil of turpentine, 1874, 687.  
 — researches on some derivatives of natural and synthetically prepared thymol, 1875, 637.  
 — usnic acid, 1876, ii., 202; 1877, i., 89; 1878, A., 882; 1882, A., 1079.  
 — note on sordidin, 1877, ii., 780.  
 — derivatives of tetrachlorether, 1878, A., 656.  
 — preparation of carbon oxychloride, 1878, A., 853.  
 — identity of usnic and carbusnic acids, 1878, A., 882.  
 — constitution of cumin compounds and of cymene, 1879, A., 308.  
 — propylbenzoic acid, 1879, A., 321.  
 — lapachic acid, 1880, A., 267.  
 — chemical constituents of *Stereocaulon vesuvianum*, 1880, A., 551.  
 — analysis of native sodium sulphate from Sicily, 1881, A., 524.  
 — organic fluorine compounds, 1881, A., 597.  
 — researches on usnic acid and other substances extracted from lichens, 1882, A., 1079.
- Paternò, Emanuele**, and **Giovanni Briosi**, hesperidin, 1876, i., 709.
- Paternò, Emanuele**, and **Francesco Canoneri**, products of the oxidation of the ethers of thymol, 1880, A., 246.  
 — derivatives of natural and synthetical thymol, 1880, A., 883.  
 — synthesis of thymol, 1881, A., 593.
- Paternò, Emanuele**, and **C. Colombo**, reactions of bromocymene, 1878, A., 139.
- Paternò, Emanuele**, and **Michèle Fileti**, some derivatives of benzylated phenol, 1874, 371.  
 — new method of forming benzylated phenol, 1876, i., 581.  
 — action of light on nitrocuminic acid, 1876, i., 595.  
 — on the existence of two isomeric amidocuminic acids, 1876, i., 595.
- Paternò, Emanuele**, and **Girolamo Mazzara**, monochloroacetal, 1873, 1217.  
 — benzylated cresol, 1879, A., 314.  
 — cumenolcarbonic acid (*propylhydroxybenzoic acid*), 1879, A., 642.  
 — thermal water of Termini-Imerese, 1879, A., 698.

- Paternò, Emanuele**, and **Agostino Ogli-aloro-Todaro**, researches on chloral, 1874, 459.
- — — — — picrotoxin, 1877, i., 719; ii., 790; 1879, A., 729; 1881, A., 440.
- — — — — a new acid (atranoric acid) from *Lecanora atra*, 1877, ii., 786.
- — — — — supposed identity of columbin and limonin, 1879, A., 730.
- Paternò, Emanuele**, and **Vincenzo Oliveri**, researches on the three isomeric fluobenzoic acids, and on fluotoluic and fluoanisic acids, 1882, A., 613.
- Paternò, Emanuele**, and **Giuseppe Pisati**, on trichloroacetal and tetrachlorethyl oxide, 1873, 158.
- Paternò, Emanuele**, and **Salvatore Scichilone**, synthesis of aromatic aldehydes by means of chromyl chloride, 1881, A., 423.
- Paternò, Emanuele**, and **Pietro Spica**, on *p*-toluic nitrile and some of its derivatives, 1875, 642.
- — — — — benzyl derivatives of urea and sulphurea, 1876, i., 601.
- — — — — action of allyl iodide and zinc on ethyl oxalate, 1877, i., 60.
- — — — — synthesis of propylisopropylbenzene, 1877, i., 77.
- — — — — eumol, 1877, i., 593.
- — — — — propylbenzene and propylphenol, 1877, i., 707.
- — — — — propylisopropylbenzene, 1878, A., 138.
- — — — — propylisopropylbenzene and propylbenzoic and homoterephthalic acids, 1878, A., 296.
- — — — — hydrocarbon from betulin, 1878, A., 569.
- — — — — cymene from cumic alcohol, 1880, A., 106.
- — — — — cymenecarboxylic acid, 1880, A., 163.
- — — — — researches on the formation of ptomaines, 1882, A., 741.
- Paternò, Emanuele**. See also **Wilhelm Körner**, **Adolf Lieben**, **Giuseppe Pisati**.
- Paterson, G.**, composition of an iron deposit, 1877, i., 355.
- Paterson, W. M.**, Scottish tripolite, 1877, ii., 174.
- Patrouillard, Charles**, detection of arsenic in salts of the alkalis and alkaline earths used in pharmacy, 1876, i., 110.
- Patrouillard, Lucien**, preparation and fermentation of magnesium acetate, 1877, ii., 588.
- Patterson, Geo.** See **Charles Romley Alder Wright**.
- Pattinson, Hugh Salvin**. See **Wilhelm Michler**.
- Pattinson, John**, an abnormal sample of new milk, 1877, i., 232.
- — — — — deposition of carbon and other bodies from the gases of blast furnaces, 1877, ii., 375.
- — — — — on a method of precipitating manganese entirely as dioxide, and its application to the volumetric determination of manganese, 1879, T., 365.
- Pattinson, John**, and **John Edward Stead**, estimation of barley in oatmeal, 1877, i., 348.
- Pauchon, A.**, influence of light on the respiration of seeds during germination, 1882, A., 419.
- Pauchon, E.**, tension of the vapour of saline solutions, 1880, A., 211.
- Paul**, improvements in photolithography, 1874, 1020.
- Paul, Benjamin H.**, East Indian cinchona bark, 1876, i., 423.
- — — — — the pharmacopœia test for quinine sulphate, 1877, ii., 642.
- Paul, Benjamin H.**, and **Alfred John Cownley**, valuation of commercial anthracene, 1873, 1263.
- — — — — alkaloid from *Cinchona cuprea*, 1882, A., 316.
- Paul, Benjamin H.**, and **Charles Thomas Kingzett**, presence of metallic compounds in alimentary substances, 1877, ii., 912.
- — — — — tannins, 1878, T., 217.
- Paul, C.**, tinning of brass, copper, iron, etc., in the wet way, 1873, 955.
- Pauleau**. See **Eugène Varenne**.
- Paulet, Maxime**, decay of wood treated with cupric sulphate, 1875, 491.
- Paulsen, W.**, action of different manures on the yield of potatoes, 1880, A., 187.
- Pauly, Conrad**, benzenedisulphinic acid, 1877, i., 312.
- — — — — formation of sulphinic acids of the fatty group from the chloranhydrides of the sulphonic acids, 1877, ii., 734.
- Pauly, Conrad**, and **Robert Otto**, disulphoxides of benzene and toluene, 1877, i., 463; 1878, A., 414; 1879, A., 243.
- — — — — decomposition of ethyl disulphoxide by potash, 1879, A., 219.
- Pauly, Conrad**. See also **H. Müller**.
- Pauly, M.**, ammonia derivatives of benzophenone, 1877, ii., 614.
- Pauly, M.**, direct decomposition of sugar-lime, 1880, A., 931.
- Pavesi, Angelo**, and **Ermenequillo Rotondi**, researches in agricultura chemistry, 1875, 178.
- Pavy, Frederick William**, the physiology of sugar in relation to the blood, 1877, ii., 909; 1880, A., 486.

- Pavy, Frederick William**, volumetric estimation of sugar by an ammoniacal copper test giving reduction without precipitation, 1879, A., 557; 1880, A., 512.
- physiology of sugar in the animal system, 1882, A., 322.
- Pawel, O.**, Roussin's salt, 1880, A., 217, 218.
- Pawlewski, Bronislaw**, the speed of reactions, 1880, A., 438.
- acid from *Viscum album*, 1881, A., 441.
- a simple method of determining boiling points, 1881, A., 642.
- the critical temperature of liquids, 1882, A., 915.
- Pawloff, Dmitri P.**, on dimethylisobutylcarbinol and a new heptene, 1874, 1076.
- preparation of ketones, 1876, i., 895.
- formation of tertiary alcohols, 1877, i., 57.
- action of organo-zinc compounds on the chlorides of acid radicals, 1877, ii., 310, 732.
- tetramethylethylene and its derivatives and the chemical structure of pinacene, 1878, A., 562; 1879, A., 536.
- action of dilute sulphuric acid on tetramethylethylene glycol, 1878, A., 966.
- Pawolleck, B.**, substitution products of citric acid, 1876, i., 375.
- Payard**, glass and crystals coloured with gold, 1874, 929.
- Peake, William Henry Aston**. See *Robert Warington*.
- Pebal, Leopold von**, researches on hypochloric acid and enchlorine, 1875, 1157.
- use of electromagnets for the mechanical separation of minerals, 1882, A., 810.
- Pebal, Leopold von**, and *E. Fürst*, action of hypochlorous acid on ethylene, 1879, A., 446.
- Pebal, Leopold von**, and *Gustav Schacherl*, vapour density of chlorine dioxide, 1882, A., 1161.
- Pechiney, Alfred Rangod (& Co.)**, preparation of anhydrous sodium sulphate from Glauber's salt, 1879, A., 596.
- Pechmann, Hans (Freiherr) von**, *p*-amido-m-toluenesulphonic acid, 1875, 78.
- constitution of anthraquinone, 1880, A., 323.
- compounds of *o*-benzoylbenzoic acid with phenols, 1881, A., 96; 1882, A., 184.
- Pechmann, Hans (Freiherr) von**, compounds of *o*-benzoylbenzoic acid with hydrocarbons, 1882, A., 181.
- condensation products of dibasic fatty acids, 1882, A., 1074.
- Pecile, Domenico**, guanine in pigs' urine, 1877, i., 330.
- Peckham, Stephen Farnum**, determination of specific gravities, 1879, A., 498.
- composition of the ashes of wheat-bran, 1879, A., 961.
- explosion of the flour mills at Minneapolis, Minnesota, 1879, A., 1079.
- Peckham, Stephen Farnum**, and *Christopher Webber Hall*, lintonite and other forms of thomsenite, 1880, A., 535.
- Peckolt, Theodore, Carica Papaya** and *papayatin*, 1880, A., 128.
- Pedersen, Rasmus**, influence of temperature on the evolution of carbonic anhydride by barley seeds, 1879, A., 1048.
- Pedler, Alexander**, cobra poison, 1880, A., 490.
- Pierce, Benjamin Osgood**, the electromotive power of gas elements, 1879, A., 998.
- emission spectra of haloid mercury compounds, 1880, A., 81.
- Pierce, Gertrude K.** See *Edgar Francis Smith*.
- Peitzsch, B.**, action of ethyloxalic chloride on sulphurea, 1874, 1161.
- Peitzsch, B.**, and *Ludwig Rudolph Friedrich Salomon*, preparation of sulphuretted allophanic ethers, 1874, 364.
- Peitzsch, B.** (and others), estimation of phosphoric acid, 1881, A., 194.
- Pekelharing, Cornelis Adrianus**, determination of urea, 1876, i., 775.
- peptone, 1880, A., 901.
- Peligot, Eugène Melchior**, distribution of potash and soda in plants, 1873, 929.
- the alloys employed for gold coinage, 1873, 1067.
- crystallisation of glass, 1874, 543.
- on the saline matters which the sugar beet derives from the soil and from manures, 1875, 378.
- remarks on the mineral substances present in beet juice, and on the potash extracted from it, 1875, 379.
- action of boric acid and of borates on vegetation, 1877, i., 223.
- composition of ancient glass and crystal, 1877, i., 234; 1878, A., 646.
- some properties of glucose, 1880, A., 232.



- Peligot, Eugène Melchior**, compound of levulose with lime, 1880, A., 539.  
 — saccharin, 1880, A., 620.
- Pellagri, Guido**, processes for purifying potassium iodide from iodate, 1876, ii., 381.  
 — phyllocyanin as a reagent, 1877, i., 109.  
 — action of light and of carbonic acid on potassium iodide, 1877, ii., 706.  
 — new reaction of morphine, 1877, ii., 808.
- Pellat, Henri**, influence of one metal on the surface of another metal placed at a short distance, 1882, A., 921.
- Pellegrini, Niccolò**, analyses of chrysocolla from Chili, 1880, A., 97.  
 — physico-chemical analysis of clay soils, 1880, A., 511.
- Pellet, Henri**, determination of the total nitrogen in manures, 1873, 1161.  
 — the action of hydrogen on silver nitrate, 1874, 867.  
 — several methods of chemical analysis, 1877, i., 226.  
 — precipitation of phosphoric acid by ammonia in presence of lime, baryta, magnesia, alumina, and ferric oxide, 1877, i., 578.  
 — estimation of ferric oxide and alumina in presence of phosphoric acid, 1877, ii., 223.  
 — estimation of chlorine by silver nitrate and potassium bichromate in presence of other salts, 1877, ii., 916.  
 — influence of the alkalinity of different substances on the rotatory power of sugar, 1878, A., 22.  
 — a new copper solution for the estimation of glucose, 1878, A., 612.  
 — action of various substances on crystallizable sugar, 1878, A., 719.  
 — distribution of salts in the soil, 1878, A., 804.  
 — ratio of the sugar in the beet to the phosphoric acid in the root and leaves, 1879, A., 818.  
 — estimation of organic nitrogen in natural waters, 1880, A., 62.  
 — occurrence of ammonia in plants, 1880, A., 568; 1881, A., 116; 1882, A., 885.  
 — relation between the sugar and mineral and nitrogenous matters in normal beetroot and in beetroot run to seed, 1880, A., 569.  
 — distribution of potassium nitrate in the beet, 1880, A., 733.  
 — certain properties of bone charcoal, 1880, A., 834.
- Pellet, Henri**, relation between the starch, phosphoric acid, and mineral constituents of the potato, 1880, A., 912.  
 — ash of beet, 1880, A., 922.  
 — action of animal charcoal in the sugar manufacture, 1881, A., 127; 1882, A., 673.  
 — constancy in composition of plants, 1881, A., 753.  
 — purification of beet juice by lime, 1882, A., 672.  
 — retrograde nitrogen, 1882, A., 769.  
 — estimation of salicylic acid in butter, milk, and urine, 1882, A., 1003.
- Pellet, Henri**, and **A. Allart**, volumetric estimation of tin, 1877, ii., 803.
- Pellet, Henri**, and **C. Brünings**, variation in the coefficient of purity of juices and syrups in consequence of the specific gravity, 1882, A., 1146.
- Pellet, Henri**, and **H. Bullier**, deterioration of sugar by keeping, 1882, A., 122.
- Pellet, Henri**, and **I. von Grobert**, determination of salicylic acid in food stuffs by a colorimetric reaction, 1881, A., 1175.
- Pellet, Henri**, and **C. Le Levandier**, beet residues as fodder, 1880, A., 734.  
 — nutritive value of diffusion pulp and pulp from the hydraulic press, 1881, A., 933.
- Pellet, Henri**, and **M. Liebschütz**, analysis of beet seeds, 1880, A., 920; 1881, A., 757.
- Pellet, Henri**. See also **P. Champion, Champonnois, Ferdinand Jean, Ed. Robinet**.
- Pellieux, J.**, and **Eugène Allary**, manufacture of iodine, 1881, A., 207.  
 — an iodometric process, 1881, A., 307.
- Pellieux, J.** See also **Eugène Allary**.
- Pelloggio, Pietro**. See **Tullio Brugnattelli**.
- Pelouze, E.**, and **Paul Audouin**, new process for the condensation of vapours held in suspension by gases, 1873, 1194.
- Peltz, A.**, alcoholic solution of shellac, 1876, ii., 678.
- Pemberton, Henry, junior**, new method of determining phosphoric acid, 1882, A., 1318.
- Penfield, Samuel Lewis**, chemical composition of triphylite, 1877, ii., 714; 1879, A., 695.  
 — volumetric estimation of fluorine, 1879, A., 829.  
 — composition of amblygonite, 1880, A., 96, 530.



- Penfield, Samuel Lewis**, analyses of some apatites containing manganese, 1881, A., 364.  
 — chemical composition of childrenite, 1881, A., 365.
- Penl, C.** See **Eduard Linnemann**.
- Penney, M. D.**, alum in flour and bread, 1879, A., 556.
- Perrepelkin, A.**, assimilation of phosphates by barley, 1873, 87.
- Perewoznikoff, A.**, synthesis of fat, 1878, A., 238.
- Perger, Hugo (Ritter) von**, action of ammonia on alizarin, 1877, ii., 342.  
 — derivatives of anthraquinone, 1879, A., 253.  
 —  $\alpha$ -diamidoanthraquinone, 1879, A., 724.  
 — amidoanthraquinone from anthraquinonesulphonic acid, 1880, A., 49.  
 — formation of dihydroanthranol and of anthracene from anthraquinone, 1881, A., 607.
- Perger, Hugo (Ritter) von.** See also **Ed. Ullrich**.
- Périer, Jean Pierre Léon**, the insoluble matter from opium extract, 1877, i., 720.
- Perkin, Arthur George**, on the action of nitric acid on di-*p*-tolylguanidine, 1880, T., 696.
- Perkin, Arthur George.** See also **John James Hummel**.
- Perkin, William Henry, senior**, anthrallic acid, 1873, 19.  
 — anthrapurpurin, 1873, 425; 1876, i., 351.  
 — action of bromine on alizarin, 1874, 401.  
 — propionic coumarin, 1875, 10.  
 — acetyl- and nitro-derivatives of alizarin, 1876, ii., 578.  
 — note on some new derivatives of anthracene, 1877, i., 209.  
 — formation of coumarin and of cinnamic and other analogous acids from the aromatic aldehydes, 1877, i., 388.  
 — dibromacetic and glyoxylic acids, 1877, ii., 90.  
 — on some hydrocarbons obtained from the homologues of cinnamic acid; and on anethol and its homologues, 1877, ii., 660.  
 — derivatives of anisole (*anisol*), 1878, T., 211.  
 — action of ammonia on anthrapurpurin, 1878, T., 216.  
 — on the action of isobutyric anhydride on the aromatic aldehydes, 1879, T., 136.
- Perkin, William Henry, senior**, on mauveine and allied colouring matters, 1879, T., 717.  
 — on the analysis of organic bodies containing nitrogen, 1880, T., 121, 457.  
 — on the products of the oxidation of *p*-toluidine, 1880, T., 546.  
 — on dibromanthraquinones and the colouring matters derived from them, 1880, T., 554.  
 — on the isomeric acids obtained from coumarin and the ethers of hydride of salicyl, 1881, T., 409.  
 — on citraconic and mesaconic ethers, and maleic and fumaric acids, 1881, T., 554.  
 — on the action of acetyl chloride on fumaric acid, 1882, T., 268.  
 — on rotary polarisation by chemical substances under magnetic influence, 1882, T., 330.  
 — some observations on the luminous incomplete combustion of ether and other organic bodies, 1882, T., 363.
- Perkin, William Henry, junior**, and **William Richard Eaton Hodgkinson**, on the action of sodium on phenylic acetate, 1880, T., 487.  
 — on the action of benzyl chloride on phenylic acetate, 1880, T., 721.
- Perkins, Frank P.**, butter analysis, 1878, A., 685.  
 — analysis of butter fat, 1879, A., 1070.  
 — determination of carbon in water residues, 1881, A., 197.  
 — estimation of nitrates in river water, 1881, A., 1173.
- Perl, Moritz Leopold**, absorption of lime salts, 1880, A., 725.
- Pernet, J.**, variation of the fixed points in mercury thermometers, 1881, A., 4.
- Peroni, Giacomo.** See **Cesare Schiaparelli**.
- Perrenoud, Paul**, *m*-anethol camphor, 1877, ii., 480.
- Perret, Emile**, new method for the extraction of resin of scammony, 1877, ii., 950.
- Perret, Michel**, manures, 1882, A., 92.
- Perrey, Ad.**, origin of saccharine substances in plants, 1882, A., 881.
- Perrot, Eug.**, estimation of sugar by standard solutions, 1877, i., 744.  
 — volumetric estimation of phosphoric acid, 1882, A., 94.
- Perry, John**, and **William Edward Ayrton**, a preliminary account of the reduction of observations on strained

- material, Leyden jars, and volta-meters, 1881, A., 963.
- Perry, John.** See also *William Edward Ayrton*.
- Perry, Nelson W.**, platinum alloy assay, 1879, A., 555.
- Perry, Nelson W.** See also *Frank Wigglesworth Clarke*.
- Personne, Jacques**, chloral and its combination with albuminoid matters, 1874, 355.
- volumetric estimation of potassium iodide, 1875, 1051.
- constitution and properties of dialysed iron, 1880, A., 356.
- Persoz, Jules**, preparation of potassium nitrite, 1878, A., 471.
- action of hydrochlorides of the amines on glycerin, 1878, A., 966.
- Peschechonoff**, action of thymol on animal ferments, 1874, 997.
- Pesci, Leone**, on ferric oxide as a generator of nitric acid, and on the origin of the nitre in some experiments of Cloëz, 1876, i., 188.
- preparation of potassium bicarbonate, 1876, ii., 381.
- atropine, 1881, A., 293; 1882, A., 740.
- daturine, 1882, A., 634.
- action of potassium permanganate on hydroapatropine, 1882, A., 1217.
- Peter, H. von**, milk analysis, 1881, A., 1184.
- employment of Lawrence's cooler in the creaming of milk, 1882, A., 1149.
- Peter, H. von.** See also *Mae Schrodtt*.
- Petermann, Arthur**, carrot seed, 1879, A., 822.
- germinating power of beet-root seeds, 1880, A., 177.
- composition of fowls' dung, 1880, A., 315.
- Norwegian phosphorite, 1880, A., 356.
- report on the agricultural value of the so-called retrograde phosphoric acid, 1880, A., 739.
- analyses of cocoa and palm nut meal, 1881, A., 301.
- composition of "diffusion" and "press" residues, 1881, A., 301.
- presence of corn cockle seeds in meals, 1881, A., 317.
- composition of two samples of peat, 1881, A., 641.
- African guano, 1881, A., 758.
- agricultural value of leather meal, 1882, A., 331.
- Petermann, Arthur**, analysis of white willow (*Salix alba*), 1882, A., 988.
- experiments with so-called "dissolved wool," 1882, A., 1228.
- composition of materials adapted for compost, 1882, A., 1229.
- Petermann, Arthur** (and others), on Belgian phosphorites, 1880, A., 198.
- — agricultural value of reduced and insoluble phosphates, 1880, A., 571.
- Peters, Joh. Fr.**, manuring experiments, 1881, A., 1079.
- Peters, P.**, analysis of a calculus from a horse, 1880, A., 174.
- Peters, Samuel**, estimation of manganese in iron and steel, 1876, i., 750.
- Petersen, Paul**, and *Franz Soxhlet*, the cartilage of the shark, 1873, 1243.
- Petersen, Theodor**, guadaleazarite, a new mineral, 1873, 42.
- the greenstones, 1873, 733.
- constitution of benzene derivatives, 1873, 1132; 1874, 466.
- the basalt and hydrotachylite of Rossdorf, Darmstadt, 1873, 1211.
- mineralogical notes: 1. Apatite in osteolite. 2. Scolecite from Poonalh, 1874, 450.
- triclinic feldspars, 1874, 877.
- substituted phenols, 1875, 762.
- "tripolith," 1882, A., 247.
- investigations of greenstones: melaphyre, 1882, A., 588.
- Petersen, Theodor.** See also *Rudolph Christian Böttger*.
- Peterson, Heinrich**, preparation of lithium, cesium, and rubidium from lepidolite, 1877, ii., 706.
- Petit, Auguste**, antifermentescible substances, 1873, 84.
- narceine hydrochloride, 1873, 510.
- the sugar contained in vine leaves, 1874, 241.
- a new alkaloid, 1879, A., 658.
- testing of pepsin, 1880, A., 424.
- rapid estimation of uric acid, 1881, A., 941.
- Petit, Auguste.** See also *Louis Legrip*.
- Petit, Th.**, valuation of wine, 1880, A., 421.
- Petri, Camille.** See *Rudolph Fittig, Victor Meyer*.
- Petri, Richard Julius**, chondrin, 1879, A., 661.
- detection of blighted wheat in flour by the spectroscope, 1879, A., 977.
- Petri, Wilhelm**, derivatives of itaconic, mesaconic, and citraconic acids, 1881, A., 1032.

- Petri, Wilhelm.** See also *Richard Anschütz*.
- Petrieff, Basil M.**, the azo-derivatives of liquid and solid nitrotoluene, 1873, 1027.
- ethylerotonic acid, 1874, 41.
- dibromomalonie acid and dioxy-malonie acid, 1874, 787.
- action of bromine on malonic acid, 1875, 1176.
- the chemical nature of mesoxalie acid and preparation of tartronic acid, 1878, A., 490.
- Petrowsky, D.**, composition of the grey and white substances of the brain, 1873, 922.
- Pettenkofer, Max Josef von**, amount of carbon dioxide in the air of the soil of Munich at different depths and at different times, 1873, 361; 1874, 36.
- rapid dissemination of gases of different specific gravities, 1873, 720; 1874, 16.
- testing for free carbonic acid in waters, 1876, i., 435.
- on the amount of carbonic anhydride in the air of the Libyan desert, 1876, i., 891.
- Pettenkofer, Max Josef von**, and *Carl von Voit*, results of feeding with flesh and fat, 1873, 1047.
- — on the processes of decomposition which occur in the animal body on feeding with meat and carbohydrates and with carbohydrates alone, 1875, 652.
- — elimination of gaseous nitrogen from the animal body, 1882, A., 238, 747.
- Pettersson, Otto**, estimation of selenic acid, 1874, 289.
- selenic alums, 1874, 337.
- molecular volumes of alums, 1874, 760; 1882, A., 1259.
- molecular volumes of sulphates and selenates, 1877, i., 267, 437.
- Lothar Meyer and the latest discovery in physics, 1881, A., 133.
- thermal and volumetric researches on formic and acetic acids, 1882, A., 3.
- Pettersson, Otto**, and *Gustav Ekman*, the atomic weight of selenium, 1877, i., 44.
- Pettersson, Otto**, and *Åke Gerhardt Ekstrand*, Victor Meyer's method of determining vapour densities, 1880, A., 841.
- — vapour densities of anhydrous and hydrated formic and acetic acids, 1880, A., 868.
- Pettersson, Otto.** See also *Lars Fredrik Nilson*.
- Pettigrew, James Bell.** See *Edmund James Mills*.
- Petzholdt, Alexander**, hepatic limestone from Algeria, 1873, 482.
- Pfaff, Immanuel Burkhard Alexius Friedrich**, influence of change of temperature and pressure on double refraction, 1881, A., 334.
- variability of the angles of crystals, 1881, A., 356.
- Pfaff, Siegfried.** See *Friedrich Ludwig Alphons Oppenheim*.
- Pfankuch, Friedrich**, new organic compounds and new modes of preparing them, 1873, 362.
- Pfaundler, Leopold**, remarks on Thomsen's paper on the influence of temperature upon the heat of chemical combination, 1874, 535.
- remarks on Hübner and Wiesinger's paper on the action of a weak acid on the salt of a stronger acid, 1875, 998.
- on the heat evolved on mixing sulphuric acid and water, and the temperature in connection with the molecular heats and boiling points of the hydrates formed, 1875, 1150.
- freezing mixtures, 1876, i., 867; ii., 39.
- temperature of steam, 1876, ii., 39.
- the unequal solubility of different surfaces of the same crystal, 1876, ii., 43.
- on the soft and semi-fluid states of aggregation: regelation and recrystallisation, 1877, i., 433.
- the application of the principle of dissimilar molecules to the explanation of the phenomena of supersaturated solutions, super-fused bodies, spontaneous explosions, and the gradual crystallisation of amorphous bodies, 1877, i., 435.
- vapour density determinations at high temperatures of substances which attack mercury, 1879, A., 499.
- Pfaundler, Leopold**, and *Georg Baumgartner*, specific heat of water, 1880, A., 601.
- Pfaundler, Leopold**, and *E. Schnegg*, freezing temperatures of sulphuric acid hydrates, 1876, i., 867.
- Pfeffer, Wilhelm**, influence of the spectrum colours on the decomposition of carbon dioxide by plants, 1873, 400.
- Pfeifer, Franz**, electrolysis of solutions of antimony chloride: explosive antimony, 1882, A., 467.

- Pfeiffer, Emil**, working of beetroot ash, 1873, 99.  
 — preparation of rubidium from beetroot, 1873, 174.  
 — on bischofite, a new mineral from the Stassfurt mines, 1873, A., 277.  
 — oxalic acid not poisonous (?), 1879, A., 335.  
 — separation of the alkaline earths from the alkalis, 1879, A., 341.  
 — estimation of nitric acid by potassium dichromate, 1879, A., 399.  
 — tetrathionic and pentathionic acids, 1879, A., 1013.  
 — pentahydrated calcium carbonate, 1880, A., 789.  
 — glauberite, 1882, A., 577.
- Pfeiffer, Franz Wilhelm Theodor Christian**, and **Bernhard Tollens**, compounds of the carbohydrates with alkalis, 1882, A., 490.
- Pfäuger, Eduard Friedrich Wilhelm**, contributions to the theory of respiration. I. On physiological combustion in living organisms, 1875, 1040.  
 — phosphorescence of decaying organisms, 1876, i., 950.  
 — influence of temperature on the tissue-change in the Mammalia, 1876, ii., 106.  
 — influence of the eye on tissue-change in the animal body, 1876, ii., 107.  
 — the regulation of animal temperature in the Mammalia, 1876, ii., 647.  
 — on the influence of temperature on the respiration of cold-blooded animals, 1877, i., 327.  
 — influence of respiration on the metamorphosis of tissue, 1877, i., 482.  
 — estimation of urea, 1880, A., 681; 1882, A., 780.
- Pfund, Paul**, on the manufacture of sugar of lead, 1876, i., 798.
- Philipp, Julius**, remarks on Fleischer's "mercury oxysulphocyanate," 1876, ii., 74.  
 — ultramarine, 1876, ii., 383; 1877, i., 686; 1878, A., 175.  
 — silver ultramarine, 1878, A., 199.  
 — green and blue ultramarine, 1879, A., 108.  
 — solidifying point of bromine, 1880, A., 215.  
 — tungsten bronzes, 1882, A., 930.
- Philipp, Julius**, and **Paul Heinrich Schwebel**, tungsten bronze, 1880, A., 157.
- Philipp, Julius**. See also **Eugen Bamberger**.
- Philippart, E.**, on swedes, 1881, A., 756.
- Philippi, Otto**, and **Bernhard Tollens**, the dibromopropionic acid obtained from propionic acid, 1873, 1018.  
 —  $\alpha$ -monobromacrylic acid and conversion of  $\alpha$ -dibromopropionic acid into the  $\beta$ -acid, 1874, 680.
- Philips, Leonard**, a homologue of caffeine, 1877, i., 93.
- Phillips, Francis C.**, estimation of chromium in chrome iron ore, 1874, 289.  
 — on the formation of alkaline chlorides from their sulphates by ignition with ammonium chloride, 1875, 103.
- Phillips, John Arthur**, composition and origin of the waters of a salt-spring in Huel Seaton mine, 1873, 857.  
 — note on the composition of certain mine waters, 1874, 967.  
 — structure and composition of certain pseudomorphic crystals having the form of orthoclase, 1875, 684.
- Phillips, Samuel E.**, on oxyammonias and phosphine bases, 1873, 284.  
 — the constitution of saffranin, 1874, 81.
- Phipson, Thomas Lamb**, on anthracene-amine, 1873, 641.  
 — phenolcyanine, 1873, 1041.  
 — a curious reaction of benzoic, salicylic and hippuric acids, 1873, 1145.  
 — presence of cyanogen in bromine, 1874, 94.  
 — distribution and estimation of thallium, 1874, 662.  
 — presence of metallic silver in galena, 1874, 662.  
 — phenol as a probable source of indigo, 1874, 692.  
 — measurement of the chemical action of solar light, 1874, 1124.  
 — chrysenin, 1875, 91.  
 — sesquisulphide of iron or ferrie sulphide, 1875, 238.  
 — on a pulmonary concretion, 1875, 375.  
 — observations on the production of nitrous ether by means of sulphovinic acid, 1875, 747.  
 — intermittent ebullition, 1875, 864.  
 — magnetisation of ilmenite (*titanic ironstone*), 1876, i., 349.  
 — on noctilucin, the phosphorescent principle of luminous animals, 1876, i., 720.  
 — manganese peroxides, 1876, ii., 176, 387.  
 — the tripolite of Barbados, 1877, i., 177.



- Phipson, Thomas Lamb**, on salicylol, 1877, ii., 481.
- observations on some xanthates: separation of nickel and cobalt, 1877, ii., 597, 925.
  - nitrosalicylic acid, 1877, ii., 617.
  - melilotol, 1878, A., 576.
  - production of heat by chemical action, 1878, A., 696.
  - note on urea and crenate of ammonia in spring water, 1878, A., 754.
  - substances obtained from strawberry roots, 1878, A., 981.
  - new mineral white pigment, 1878, A., 1017.
  - water from the river Dart, 1879, A., 906.
  - colouring matter of *Palmella cruenta*, 1879, A., 1042.
  - characin, 1880, A., 53.
  - notes on some analyses of waters, 1880, A., 62.
  - palmellin and characin extracted from *Algæ* by water, 1880, A., 325.
  - preservation of solutions of palmellin, 1880, A., 720.
  - rusting of iron, 1881, A., 512.
  - grains of silica and *Micrococci* in the atmosphere, 1881, A., 645.
  - curious actinic phenomenon, 1881, A., 863, 1092.
  - actinium, a new metal, 1881, A., 1104.
  - further notes on actinium, and on the equivalent of zinc, 1882, A., 697.
- Phoebus, Philip**, chemical composition of elemi, 1876, i., 614.
- Piarron de Mondésir, Emile Siméon**, mechanical explanation of the maximum density of water, 1874, 220.
- Picard, Pierre**, sugar formation in certain marine animals, 1876, i., 949.
- urea in the blood, 1877, i., 329, 486.
  - researches on the urea contained in the organs, 1879, A., 175.
  - albuminoid compounds of the organs, and of the spleen in particular, 1879, A., 175.
  - Bernard's method for the estimation of glucose in blood, 1879, A., 674.
- Piccard, Jules**, chrysin (*chrysinic acid*), 1873, 1236.
- some constituents of poplar buds, 1873, 1237.
  - chrysin and tectochrysin and higher homologues, 1874, 1165; 1877, ii., 342.
  - on protaminine, guanine, and sarcine as contained in salmon roe, 1875, 566.
- Piccard, Jules**, direct synthesis of anthraquinone, 1875, 570.
- determination of melting points, 1875, 863.
  - dinitroresols, 1875, 1022.
  - essential oil of poplar, 1875, 1191.
  - cantharidin and an acid derivative thereof, 1878, A., 233.
  - cantharic acid and a hydrocarbon  $C_8H_{12}$ , 1879, A., 270.
  - derivatives of cantharidin and their relation to the ortho-series, 1879, A., 655.
  - modification of Victor Meyer's vapour density apparatus, 1880, A., 743.
- Piccard, Jules**, and **Carl Beck**, conversion of salicylic into salicyluric acid in the animal organism, 1876, i., 950.
- Piccard, Jules**, and **August Friedrich Humbert**, resoreindisulphonic acid, 1877, i., 312.
- resorcintrisulphonic acid, 1877, ii., 340.
- Piccini, Augusto**, testing for nitric acid in presence of nitrous acid, 1880, A., 139.
- separation and estimation of nitric and nitrous acids, 1881, A., 1080.
  - oxidation of titanio acid, 1882, A., 809.
- Piccini, Augusto**. See also *Michele Fileti*.
- Pichard, P.**, colorimetric method for the estimation of manganese in iron ores, cast iron, and steel, 1873, 407.
- alkaline reaction of magnesium carbonates and silicates, free, mixed, and combined, 1879, A., 298.
  - sugar-beet cultivation in Vaucluse, 1882, A., 244.
- Pichon**, oxidation of sulphur, 1876, i., 188.
- Pickering, Spencer Percival Umfrerville**, action of sulphuric acid on copper, 1873, T., 112.
- on the action of hydrochloric acid on manganese dioxide, 1879, T., 654.
  - ammonium nitrate, 1879, A., 200.
  - on the reaction between sodium thiosulphate and iodine: estimation of manganese oxides and potassium bichromate, 1880, T., 128.
  - on the basic sulphates of iron, 1880, T., 807.
  - on the sulphides of copper, 1881, T., 401.
  - on the oxides of manganese, 1881, A., 789.
  - on the constancy of thiosulphate solutions, 1882, A., 424.



- Pickering, Spencer Percival Umfreville**, aluminium sulphates, 1882, A., 698.
- Picot, J.**, antiseptic properties of sodium silicate, 1873, 291.
- Pictet, Amé.**, conversion of fumaric into maleic acid, 1882, A., 389.
- Pictet, Amé.** See also *Richard Anschütz*.
- Pictet, Raoul**, application of the mechanical theory of heat to the study of volatile liquids: simple relations between latent heat, molecular weights, and vapour tension, 1876, ii., 38; 1877, i., 162.
- liquefaction of oxygen, 1878, A., 10.
- sulphurous acid ice-machine, 1878, A., 251.
- study of the molecular constitution of liquids by means of their coefficient of dilatation, specific heat, and atomic weight, 1879, A., 875.
- Pierce, Frederick Morrish**, on the physiological action of certain morphine and codeine derivatives, 1874, 1043.
- on the physiological action of cotarnine and hydrocotarnine, 1875, 585.
- Pierre, Joachim Isidore**, boiling point of liquefied sulphur dioxide, 1873, 597.
- action of distilled water on lead, 1874, 1064.
- on the alcohols accompanying ethyl alcohol, 1876, i., 364.
- sugar in the leaves of beetroot, 1877, i., 487.
- the effect of coating wheat with oil, 1877, ii., 954.
- oiling of corn, 1879, A., 822.
- Pierre, Joachim Isidore**, and **Lemétayer**, spring barley as green fodder, 1881, A., 755.
- Pierre, Joachim Isidore**, and **Ed. Puchot**, propionic acid, 1873, 44, 615.
- isobutyric acid, 1873, 55, 615.
- valeric acid, 1873, 55, 874.
- the law of boiling points of homologous organic compounds, 1873, 257.
- on several groups of isomeric bodies derived from the fermentation alcohols, 1873, 258.
- action of the principal derivatives of amylic alcohol on polarised light, 1873, 1017.
- dihydrated sulphur trioxide, 1874, 770, 960.
- new crystallised hydrate of hydrochloric acid, 1876, i., 517.
- Pierre, Joachim Isidore**, and **Ed. Puchot**, products of distillation of alcohol, 1879, A., 612.
- Pierre, Joachim Isidore**, and **Jean Serane**, employment of box-trees in agriculture, 1882, A., 93.
- Pieschel, F.**, distillation of hydroxamic acid, 1875, 751.
- Piesse, Charles Henry**, estimation of carbon in pig iron, 1874, 188.
- estimation of sulphur in pig iron, 1874, 391.
- solubility of lead chloride in glycerin, 1874, 505.
- estimation of silicon, graphite, manganese, etc., in pig iron, 1874, 711.
- copper in preserved green peas, 1877, ii., 511.
- Piesse, Charles Henry**, and **Lionel Stansell**, analyses of black and white mustard, 1881, A., 205.
- Piesse, Charles Henry**. See also *Charles Romley Alder Wright*.
- Piest, Karl**. See *Ferdinand Tiemann*.
- Pieszczek, Ernst**, new fossil resins from East Prussia, 1881, A., 687.
- Pieverling, L. von**, selenium compounds of ethyl, 1877, i., 290; 1878, A., 129.
- myricyl alcohol and some of its derivatives, 1877, i., 586.
- Pike, William Herbert**, benzoysulphurea, 1873, 1132.
- homologues of oxaluric acid, 1874, 49.
- Pike, William Herbert**. See also *Rudolf Biedermann*.
- Pile, Wilson H.**, new application of tube hydrometers, 1873, 131.
- Pilleux, Lud.**, heat developed by magnetization, 1882, A., 1019.
- Pillitz, Wilhelm**, methods of analyzing grain, 1873, 1061.
- absorptive power of soils, 1876, i., 727.
- analysis of the Zsadány meteorite, 1879, A., 397.
- argentous oxide, 1882, A., 997.
- Pilter, Th. (and Co.)**, decomposition of phosphatic minerals, 1879, A., 839.
- artificial animal charcoal, 1879, A., 844.
- Pinchon, Louis Alfred**, new form of burette, 1875, 1297.
- detection by chemical means of various fibres in threads and stuffs, 1876, ii., 118.
- testing of oils, 1877, i., 348.
- Pinner, Adolf**, conversion of dichlorallylene into acrylic acid, 1874, 456.

- Pinner, Adolf**, lactic acid of the allyl series, 1874, 682.  
 — trichlorolactic acid, 1874, 786.  
 — action of bromine on aldehyde, 1875, 1174.  
 — hydrocarbon containing  $C_3H_2$ , 1875, 1245.  
 — action of fuming nitric acid on dichlorallylene, 1876, i., 57.  
 — production of malonic acid from chloracrylic ether, 1876, i., 64.  
 — crotonic chloral, 1876, i., 552.  
 — bye-products from the preparation of crotonic chloral, 1876, i., 553.  
 — hexylehloral, 1877, ii., 586.  
 — constitution of chloralacetamide; remarks on a previous paper, 1878, A., 294.  
 — allyl cyanide and the products of its saponification, 1880, A., 99.  
 — condensation of acetone, 1881, A., 796; 1882, A., 941.  
**Pinner, Adolf**, and **Carl Bischoff**, action of hydrocyanic acid on chloral and crotonic chloral, 1876, i., 554.  
**Pinner, Adolf**, and **Friedrich Fuchs**, contributions to the history of chloral, 1877, ii., 584.  
**Pinner, Adolf**, and **Friedrich Klein**, conversion of nitriles into imides, 1878, A., 141, 491, 864; 1879, A., 46.  
 — — azobenzenesulphonic acids, 1878, A., 865.  
 — — butylchloral hydrocyanide, 1879, A., 41.  
 — — imido-thioethers, 1879, A., 147.  
**Pinner, Adolf**, and **Wilhelm Schumann**, action of sodium and carbonic anhydride on allylene chloride, 1881, A., 793.  
 — — action of hydrochloric acid on thiocarbimides and thiocyanic ethers in presence of absolute alcohol, 1881, A., 811.  
**Pirath, Peter**. See **Otto Wallach**.  
**Pisani, Félix**, a new silico-aluminate of manganese containing vanadium from Salm-Château, Belgium, 1873, 355.  
 — a new silver amalgam, 1873, 356.  
 — analysis of arite, 1873, 479.  
 — analysis of jeffersonite, 1873, 479.  
 — analysis of lanarkite from Leadhills, 1873, 480.  
 — analysis of the meteorite of Roda, 1875, 438.  
 — mineralogical notes, 1876, ii., 610.  
 — a sulphantimonide of lead found at Arnsberg, Westphalia, 1877, i., 56; ii., 855.  
**Pisani, Félix**, crystallised barium silicate, 1877, i., 442.  
 — chemical examination of turnerite, 1877, ii., 715.  
 — bastite from Elba, 1877, ii., 719.  
 — description of several minerals: triphane, tephroite, hydrotrophite, pharmacosiderite, 1877, ii., 850.  
 — a new specific gravity apparatus, 1878, A., 364.  
 — on lettsonite, and the hypersthene and labradorite of the hyperite of Aveyron, 1878, A., 946.  
 — double selenides of lead and copper, 1879, A., 440.  
 — wagnerite from Bamle in Norway: a Russian retinite, 1879, A., 441.  
 — chroniophosphate of lead and copper, 1882, A., 283.  
 — vanadate of lead and copper from Laurium, 1882, A., 472.  
**Pisati, Giuseppe**, elasticity of metals at different temperatures, 1877, i., 38; ii., 162, 700.  
 — elasticity of torsion, 1877, i., 39.  
 — the dilatation, viscosity, and capillarity of sulphur, 1878, A., 268.  
**Pisati, Giuseppe**, and **Emanuele Paternò**, determination of the specific gravity of cymene from various sources; also of cumene and benzene, 1874, 686.  
**Pisati, Giuseppe**. See also **Emanuele Paternò**.  
**Pitkin, Lucius**, compound platينات and a new platino-potassium salt, 1880, A., 706.  
**Pitsch, Otto**, organic matters in soil: examination of Grandeau's theory, 1881, A., 117, 839.  
**Piuggari**, ammonio-nitrometry, a new method of estimating ammonia, organic nitrogen, and nitric acid in water, earth, etc., 1874, 187.  
**Piutti, Arnaldo**, action of phosphorus pentachloride on molybdic anhydride, 1880, A., 219.  
 — carbamic and thiocarbamic derivatives of phthalic acid, 1882, A., 1297.  
**Pizzi, A.**, preparation of pure manganese chloride from chlorine residues, 1877, ii., 169.  
 — detection of logwood in wine, 1881, A., 761.  
**Pizzighelli, G.** See **Josef Maria Eder**.  
**Plaats, Jan Daniel van der**, hyponitrous acid, 1878, A., 269.  
**Plagemann, A.**, action of amines on dichloronaphthaquinone, 1882, A., 973.  
**Planchon, Gustave**, cinchonamine cinchona bark, 1882, A., 634.

- Planitz, Hans von der**, action of hydrochloric acid on lead-antimony alloys, 1875, 128.  
 — action of sulphuric and hydrochloric acid on alloys of lead and antimony, 1876, i., 45.
- Planta, Adolf von**, the mineral springs of Passugg, Solis, and Tiefenkasten, in the Grisons, Switzerland, 1879, A., 126.  
 — detection of adulterated or artificial honey, 1882, A., 1327.
- Planta, Adolf von**. See also *Emil Erlennmeyer*.
- Planté, Gaston**, electric currents of high tension, 1876, i., 28.  
 — electro-silicic light, 1877, ii., 270.  
 — engraving on glass by electricity, 1878, A., 348.
- Plascuda, H.**,  $\alpha$ - and  $\beta$ -benzoylbenzoic acids, 1875, 75.
- Plascuda, H.**, and *Ernst Carl Theodor Zincke*, benzyltoluene, 1873, 1225.  
 — derivatives of benzyltoluene and tolyl phenyl ketone, 1875, 69.
- Platen, Otto von**, the influence of the eye upon tissue changes, 1876, i., 722.
- Plath, H.**, xanthopurpurin, 1877, i., 87.  
 — madder colours, 1877, ii., 496.
- Plath, H.** See also *Carl Theodor Liebermann*.
- Plauchud, Eugène**, formation of natural sulphuretted waters, 1877, i., 704; 1880, A., 709.
- Playfair, David**, note on the detection of some rare metals in pyrites flue dust, 1879, A., 973.
- Plehn, F.**, estimation of the nitrogenous constituent of urine by means of sodium hypobromite, 1875, 1059.
- Plener, J.**, gelatino-bromide emulsion, 1882, A., 902.
- Plicque, J. F.**, synthesis of ultramarine, 1878, A., 12.
- Plimpton, Richard Tayler**, on the action of ammonia and the amines upon naphthaquinone, 1880, T., 633.  
 — on the amylamines corresponding to the active and inactive alcohols of fermentation, 1881, T., 331; A., 33.  
 — on the action of tertiary amines upon acetylene dibromide, 1881, T., 536.  
 — on some halogen compounds of acetylene, 1882, T., 391.
- Plöchl, Josef**, lead formate acetate, 1881, A., 86.  
 — phenylamidoacetic acid, 1881, A., 168.  
 — action of hydrocyanic acid on hydrobenzamide, 1881, A., 820.
- Plöchl, Josef**, aromatic hydroxy- and amido-acids, 1882, A., 515.
- Ploeg, J. van der**, calcium oxalate in plants, 1880, A., 911.
- Plohn, Samuel**. See *Wilhelm Suida*.
- Plósz, Pál**, peptones and their function in nutrition, 1875, 95.  
 — action of glycerin on the animal organism, 1878, A., 525.
- Plósz, Pál**, and *Arpád Gyergyai*, on peptones and nutrition with the same, 1875, 1272.
- Plósz, Pál**, and *Ernst Tiegel*, the saccharifying ferment of the blood, 1873, 1215.
- Plotho, von**. See *Max Schrodt*.
- Plowman, Sydney**, Ngai camphor, 1874, 582.
- Plowright, Charles Bagge**. See *William Mofford Hamlet*.
- Pluchet, Em.**, Chili saltpetre for beets, 1880, A., 741.
- Plugge, Pieter Cornelis**, new reaction of phenol, 1873, 533.  
 — detection and estimation of nitrogen trioxide in natural waters and in dilute solutions of the same, 1876, i., 438.  
 — decomposition of mercuric cyanide by dilute acids alone and in presence of sodium chloride, 1879, A., 1064.
- Pochin, William**, slag obtained during the dephosphorising of iron, 1881, A., 328.
- Pode, Charles Coleridge**, and *Edwin Ray Lankester*, experiments on the development of bacteria in organic infusions, 1874, 349.
- Podolinski, Serge**, on the expulsion of carbonic oxide and nitric oxide from blood, 1873, 397.  
 — the albuminous ferment of the pancreas, 1877, i., 103.
- Podwyssozki, Valerian**, emetine, 1880, A., 720.  
 — constituents of podophyllin, 1882, A., 976.
- Poehl, Alexander von**, pilocarpine, 1881, A., 447.  
 — peptone, 1882, A., 536.
- Pogge, H.**, manuring experiments with mangold wurzel and beet, 1881, A., 61.  
 — fodder experiments on milch cows with cotton-seed meal and pea-nut meal, 1882, A., 321.
- Pohl, Joseph Johann**, method of detecting the difference between natural and artificial turquoise, 1879, A., 209.
- Poincaré, Emile Léon**, danger of employing methyl alcohol in certain industries, 1879, A., 335.

- Poitevin, L. Alphonse**, on certain photographic processes, 1877, ii., 942.
- Pokorny, F.**, purification of beetroot syrup, 1879, A., 844.
- Poleck, Theodor**, water of the Oberbrunnen, Flinsberg, Silesia, 1880, A., 226.
- *Liquor aluminii acetici*, 1882, A., 943.
- Poleck, Theodor**, and **R. Biefel**, toxicological experiments, 1878, A., 906.
- quantitative determination of sulphur in illuminating gas, 1879, A., 78.
- Poleck, Theodor**. See also **R. Biefel**.
- Poli, Ascr.** See **Giorgio Papasogli**.
- Polis, Alfred**, cubic alum and chrome alum, 1880, A., 444.
- Pollacci, Egidio**, chemical researches on the ripening of grapes, 1873, 402.
- preparation of potassium and sodium hydrate, 1873, 474.
- action of phosphorus on iodates, 1874, 338; 1877, i., 344.
- detection of phenol, 1874, 607.
- action of sulphur on calcium carbonate, 1875, 131, 612.
- action of sulphur on carbonates in presence of water, 1875, 336.
- on the origin of the sulphides found in sulphurous waters, 1876, i., 38.
- oxidation of sulphur, 1876, i., 187.
- action of sulphur in destroying Oidium, and on the emission of hydrogen by plants, 1876, ii., 540.
- estimation of carbonates in presence of sulphites and hyposulphites, 1878, A., 165.
- ripening of grapes removed from the vine, 1878, A., 595.
- test for reducing substances, especially glucose, 1878, A., 685.
- plastering of wine, 1879, A., 681, 762.
- new method of ascertaining the ripeness of grapes, 1880, A., 352.
- Polstorff, Karl**, action of benzoic chloride on morphine, 1880, A., 407.
- action of potassium ferri cyanide on morphine, 1880, A., 408.
- action of potassium ferri cyanide on methylmorphine iodide, 1880, A., 409.
- Polstorff, Karl**. See also **Karl Broockmann**.
- Pomey, Etienne Marie**, phosphoplatinic compounds, 1881, A., 802.
- Ponndorf, A. L.**, hypophosphorous acid, 1877, i., 275.
- Ponomareff, Ivan M.**, action of sulphurea and carbon disulphide on silver urea, 1874, 1088.
- transformations of persulphocyanogen, 1875, 358.
- thiammeline, a new derivative of persulphocyanogen, 1875, 1183.
- allantoxanic acid, 1879, A., 226.
- some derivatives of allantoin, 1879, A., 228.
- compounds of the uric acid group, 1879, A., 461.
- ethyl cyanate and cyanurate, 1882, A., 937.
- Pooley, Thomas A.**, analysis and composition of English beers, 1880, A., 353.
- Popoff, Alexander**, amylic alcohol, 1873, 1017.
- oxidation of ketones, 1873, 1037.
- oxidation of  $\alpha$ -oxybutyric acid, 1875, 880.
- formation of phenylated trimethylcarbinol, 1876, i., 695.
- Popoff, Alexander**, and **Wassilieff**, identity of Helm's oxyheptonic acid with Ley's acid, 1877, ii., 882.
- Popoff, Alexander**. See also **Nicolai Ley**.
- Popoff, Leo**, marsh gas fermentation, 1875, 1209.
- Popper, Richard**, quantitative determination of precipitates without filtering, washing, and drying them, 1877, ii., 638; 1879, A., 480.
- quantitative analysis of a mixture of carbon compounds, 1877, ii., 929.
- Porcher, Samuel**, native gold from Virginia, 1882, A., 20.
- possibility of artificially preparing carbon free from hydrogen, oxygen, and nitrogen, 1882, A., 26.
- Porion, Eugene**, and **Louis Mehay**, employment of the maize residues of distilleries, 1882, A., 672.
- Porro, Benedetto**, composition of grapes at different stages of ripeness, 1879, A., 820.
- Portele, Carl**, researches on the ripening of grapes and fruits, 1879, A., 1047; 1880, A., 178, 336.
- milk of Tyrolese cows, 1881, A., 1163.
- use of salicylic acid in the dairy, 1881, A., 1185.
- Portele, Carl**. See also **Eduard Mach, Jos. Samek**.
- Porter, William Edward**, examination of hops, 1878, A., 348.
- Portes, Ludovic**, physiological relations of asparagus, 1877, ii., 636.



- Portes, Ludovic, and François Ruysen**, volumetric estimation of formic acid, 1876, ii., 663.
- Porumbaru, gelose**, 1881, A., 403.
- cobaltamines, 1881, A., 1106.
- Posen, Eduard**, derivatives of umbelliferone, 1882, A., 839.
- Posen, Eduard**. See also *Rudolph Fittig*.
- Possoz, Antoine Louis**, copper solutions for the estimation of sugars, 1873, 410.
- Post, Julius**, *o*-nitrophenolsulphonic acid, 1873, 173.
- *o*-nitrophenolsulphonic acid, amido-phenolsulphonic acid, and a new nitrophenol, 1873, 903.
- constitution of the substituted phenols, 1874, 798.
- phenols, 1875, 255.
- on molecular transposition, 1876, i., 388.
- spontaneous oxidation of manganese oxides with reference to the manganese recovery process, 1880, A., 73, 368.
- composition of the Weldon "manganese mud" and some similar compounds, 1880, A., 219, 368, 611.
- influence of nitro- and amido-groups on a sulphonic group entering the benzene molecule, 1880, A., 238; 1881, A., 91.
- action of sulphuric acid on phosphates, especially calcium phosphate in connection with the manufacture of superphosphates, 1880, A., 425.
- Post, Julius, and Fr. Brackebusch**, substituted phenolsulphonic acids, 1874, 475.
- bromo- and iodo-phenolsulphonic acids from the nitrophenol melting at 110°, 1874, 476.
- Post, Julius, and Eduard Hardtung**, sulphonic acids from isomeric nitramido- and diamido-benzenes, 1880, A., 394.
- Post, Julius, and Leopold Holst**, benzamidophenolsulphonic acids, 1880, A., 642.
- Post, Julius, and Hermann Mehrrens**, physical and chemical properties of the salts and ethers of the three isomeric mononitrophenols, of  $\alpha$ - and  $\beta$ -dinitrophenols and of picric acid, 1876, i., 579.
- Post, Julius, and Chr. G. Meyer**, *m*-chloronitro- and *m*-chloramidobenzensulphonic acids, 1881, A., 1037.
- Post, Julius**. See also *W. Augustin, Hans Hübner, F. Witting*.
- Potier, Alfred**. See *E. Allard*.

- Potilizin, Alexei L.**, mutual replacement of the halogens in their compounds, 1874, 867; 1876, i., 677; 1877, ii., 109; 1880, A., 365; 1881, A., 134, 342.
- action of chlorine on anhydrous metallic bromides, 1879, A., 770.
- action of selenium on metallic sulphides, 1879, A., 771.
- limits and velocities of chemical reactions, 1880, A., 365.
- action of dry hydrogen on anhydrous haloid salts, 1881, A., 6.
- thermochemistry of double decomposition in aqueous solutions of salts, 1881, A., 869.
- velocities of chemical reactions and law of distribution, 1882, A., 456.
- influence of mass on the mutual substitution of halogens, 1882, A., 457.
- Pott, Robert**, aspartic acid produced in the oxidation of conglutin by potassium permanganate, 1873, 628.
- analysis of river mud, 1873, 1214.
- meat-flour from Fray-Bentos, 1873, 1275.
- researches on the chemical changes in the fowl's egg during incubation, 1879, A., 474.
- growth of legumes, 1880, A., 567.
- Pott, Robert**. See also *Curt Heinrich Leopold Ritthausen*.
- Pott, Rud.**, comparative examination of the quantities of carbonic acid excreted by respiration and perspiration in different species of animals in equal intervals of time, together with some experiments on the excretion of carbonic acid by the same animal under different physiological conditions, 1876, i., 721.
- Pouchet, A. Gabriel**, action of nitric acid on paraffin, 1875, 50.
- destruction of organic matter when searching for metallic poisons, 1881, A., 463.
- Power, Frederick B.**, note on a reaction of emetine, 1877, ii., 933.
- mineral water of Rosheim in Alsace, 1879, A., 698.
- Praetorius, H.** See *Wilhelm Staedel*.
- Praetorius-Seidler, Gustav**, cyanamide, 1879, A., 910; 1880, A., 370.
- Prantl, Karl**, influence of light on the growth of leaves, 1874, 381.
- Pratesi, Leonardo**, amidomonochlorobenzenesulphonic acid, 1873, 639.
- Pratt, John Waller**. See *Edmund James Mills*.
- Prazmowski, A.**, modification of the optical saccharometer, 1873, 829.



- Prazmowski, A.**, note on chemical achromatism, 1874, 1125.
- Precht, Heinrich**, action of ammonia on ethylic acetoacetate, 1878, A., 970.
- composition of the combustible gases in the Stassfurt potash mines, 1879, A., 603.
- volumetric estimation of magnesium, 1879, A., 1053.
- volumetric estimation of sulphates, 1880, A., 576.
- estimation of potassium as platinum-chloride, 1880, A., 577.
- formation of hydrogen in the Stassfurt potash mines, 1881, A., 227.
- determination of potassium sulphate in kainite, 1882, A., 96.
- krugite, 1882, A., 149.
- Precht, Heinrich**, and **Karl Kraut**, dissociation of hydrated salts, 1876, i., 185.
- Precht, Heinrich**, and **Bernard Wittjen**, solubility of mixtures of salts of the alkalis and alkaline earths, 1881, A., 978; 1882, A., 1264.
- boracite, 1882, A., 148.
- kieserite, 1882, A., 149.
- Precht, Heinrich**. See also **Friedrich Ludwig Alphons Oppenheim**.
- Prehn, A. C.**, the crotonic acid from citraconic acid, 1875, 632.
- the crotonic acid obtainable from mesaconic acid, 1875, 750.
- Prehn, A. C.**, and **Richard Hornberger**, examination of the Will-Varrentrap method of nitrogen determination, 1880, A., 348.
- Preibisch, Reinhard**, nitrocarbol, 1874, 462.
- Preis, Karl**, revivification of bone-char, 1874, 499.
- Preis, Karl**, and **Bohuslav Rayman**, action of iodine on aromatic compounds with long side-chains, 1879, A., 623; 1880, A., 463.
- cholesterin, 1879, A., 634.
- certain dichromates, 1880, A., 444.
- Prendel, Romul A.**, the meteorite of Vavilovka, 1880, A., 20.
- Prescott, Albert B.**, sulphophenic acid, 1873, 284.
- comparative determinations of the solubilities of alkaloids in the crystalline, amorphous, and nascent states, 1876, i., 403.
- action of hydrochloric acid upon metallic sulphates, 1877, ii., 840.
- laboratory notes on quinine, 1877, ii., 933.
- Prescott, Albert B.**, morphimetric processes for opium, 1880, A., 191.
- valuation of tincture of opium, 1880, A., 193.
- potassium and sodium aluminates, 1880, A., 849.
- zinc oxide in alkaline solutions, 1880, A., 852.
- silver ammonium oxide, 1880, A., 852.
- estimation of alkaloids by potassium mercuric iodide, 1882, A., 664.
- Preser, Karl**, cotton-seed meal as fodder for milch cows, 1881, A., 636.
- Prestel, Michael August Friedrich**, is peat smoke injurious to vegetation? 1873, 647.
- Preston, V.**, dyeing with aloes, 1877, ii., 378.
- Preusse, Christian**, supposed presence of pyrocatechol in plants, 1880, A., 417.
- oxidation of aromatic substances in the animal body, 1882, A., 756.
- Preusse, Christian**, and **Ferdinand Tiemann**, estimation of nitrous acid, 1878, A., 606.
- Preusse, Christian**. See also **Eugen Baumann, Ferdinand Tiemann**.
- Prevost, Edward William**, advantageous method of preparing epichlorhydrin, 1876, i., 61.
- action of humic acid on atmospheric nitrogen, 1881, T., 370.
- the effects of the growth of plants on the amount of matter removed from the soil by rain, 1881, T., 475.
- experiments on turnips with soluble and insoluble phosphates, 1882, A., 91.
- Prevost, Edward William**. See also **Henry Edward Armstrong**.
- Přibram, Richard**, and **Alois Handl**, specific viscosity of liquids, 1882, A., 272.
- Přibram, Richard**. See also **Alois Handl**.
- Price, Astley Paston**, Weinrich's improvement in the preparation and treatment of saccharine substances and compounds, 1879, A., 423.
- Prillieux, Edouard Ernest**, formation of gum in fruit-bearing trees, 1874, 383.
- the colouring matter of *Neottia Nidus-avis*, 1874, 911.
- alteration in plants when grown on heated soils, 1882, A., 641.
- Prime, Frederick**, mode of formation of the brown hæmatite deposits of the Great Valley, U.S., 1876, i., 347.
- Primke, F.**, analyses of glass, 1878, A., 100.
- Pringsheim, Nathanael**, chlorophyll, 1880, A., 560.

- Pringsheim, Nathanael**, hypochlorin and its origin, 1880, A., 671.
- Prinvault, A.**, Persian red (*chrome red*), 1876, ii., 340.
- Prinz, Hugo**. See **Paul Wagner**.
- Prinz, Otto**, opianic acid, 1882, A., 402.
- Přivoznik, Eduard**, action of a sulphur spring on cast iron, 1873, 1106.
- formation of metallic sulphides by means of the sulphides of ammonium and the alkali metals, 1874, 227.
- formation of sulphates by gas flames, 1875, 130.
- on the crystals formed in Leclanché's battery, 1876, ii., 173.
- lead analyses, 1880, A., 772.
- Přivoznik, Eduard**. See also **Anton Javorsky**.
- Prochazka, George A.** See **Hermann Endemann**.
- Procter, Henry Richardson**, note on a reaction of gallic acid, 1874, 509.
- estimation of tannin by Müntz and Ramspacher's method, 1876, ii., 554.
- some methods of estimating tannins, 1877, ii., 807.
- Weselsky's reaction for phloroglucin, 1879, A., 979.
- determination of free acid in tan liquors, 1879, A., 980.
- explosive product of a solution of phosphorus in carbon bisulphide, 1879, A., 996.
- Proctor, Bernard Simpson**, smoke of an electric lamp, 1880, A., 81.
- Pröpper, Max**, action of fuming nitric acid on ethyl acetoacetate and chlor-acetoacetate, 1882, A., 1193.
- Prollius**, estimation of the alkaloids in cinchona bark, 1882, A., 246.
- Proskauer, Bernhard**, ethene and methene selenioeyanates, 1875, 144.
- Proskauer, Bernhard**, and **Eugen Sell**, action of bromine on phenyl sulphocyanate, 1877, i., 67.
- Prud'homme, Maurice**, rosolic acid, 1873, 902.
- estimation of tannic, gallic, and pyrogallie acids, 1875, 1054.
- new colouring matters derived from anthracene, 1878, A., 78.
- dyestuff from cœrulein, 1882, A., 126.
- Prud'homme, Maurice**. See also **Félix de Lalande**.
- Pruen, S. T.**, and **G. Jones**, analysis of carbonates by means of the carbometer, 1877, ii., 38.
- Prunier, Henri**, solubility of cinchonine and estimation of cinchona barks, 1879, A., 489.
- adulteration of coffee with chicory, 1880, A., 514.
- removal of iron from zinc sulphate, 1882, A., 1265.
- Prunier, L. Léon A.**, polypropylenic hydrocarbons, 1873, 486.
- preparation of propylene and butylene bromides, 1873, 487.
- ethylacetylene and its identity with crotonylene, 1873, 1014.
- action of chlorine on isobutyl iodide, 1875, 1248.
- action of hydriodic acid on quereite, 1876, ii., 398.
- action of heat on quereite, 1877, i., 450.
- acetic and butyric ethers of quereite, 1877, ii., 877.
- quereite, 1878, A., 131, 211, 400; 1879, A., 239.
- action of potassium hydrate on quereite, 1878, A., 778.
- unsaturated hydrocarbons from the decomposition of American petroleum, 1879, A., 447, 1025.
- Prunier, L. Léon A.**, and **R. David**, erysalline products obtained from Pennsylvanian petroleum, 1879, A., 309.
- Prunier, L. Léon A.**, and **Eugène Varenne**, products from petroleum coke, 1881, A., 239.
- Przewalski, St.**, Petersburg rhubarb, 1882, A., 1126.
- Przybytek, Stanislas A.**, synthesis of  $\alpha$ -oxybutyric acid, 1877, i., 60.
- oxidation of erythrol and glycerol, 1881, A., 402.
- oxidation of glycerol by nitric acid, 1881, A., 1021.
- Puchot, Ed.**, the iodine and starch reaction, 1877, i., 107.
- butylene and its derivatives, 1878, A., 20.
- Puchot, Ed.** See also **Joachim Isidore Pierre**.
- Puls, Gotthard Julius**, quantitative estimation of albumin in blood-serum and milk, 1876, ii., 666.
- metallic glycerides, 1877, ii., 302.
- Puluj, Johann**, diffusion of vapours through porous cells, 1877, ii., 835.
- radiant matter from electrodes, 1882, A., 3.
- Pulvermacher, J. L.**, battery with a single liquid depolarised by the action of atmospheric air, 1878, A., 829.
- pocket pile with jointed elements, 1882, A., 447.

- Pumpelly, Raphael**, pseudomorphous chlorite after garnet from Lake Superior, 1876, i., 194.
- Purdie, Thomas**, on the action of sodium alcoholates on fumaric ethers, 1881, T., 344.
- on the synthesis of  $\alpha$ -isooheptane, 1881, T., 464.
- Purgold, Th. von**, action of ethyl chloride on vegetable fats, 1873, 1216.
- Purgotti, Enrico**, guaiacum as a test for copper, 1878, A., 754.
- Pusch, Theodor**, sodium potassium citrate, 1877, ii., 883.
- bye-products and waste from the potash manufactories of Stassfurt and Leopoldshall, and their influence on the land, 1878, A., 452.
- Bohr's colorimetric process for the examination of drinking water, 1879, A., 553.
- Puscher, C.**, bleaching of rape, poppy, and linseed oils, 1873, 100.
- sugar-lime as a solvent for glue, 1873, 306.
- colouring and drying of natural flowers, 1873, 307.
- a new process for colouring ivory, gelatin, feathers, etc. a fine red, 1873, 423.
- Puschl, Karl**, connection between absorption and refraction of light, 1874, 527.
- specific heat of carbon, 1874, 1046.
- on the internal heat of bodies (Körperwärme) and the density of the luminiferous ether, 1874, 1056.
- on the behaviour of saturated vapours, 1875, 997.
- influence of heat on the volume of caoutchouc, 1875, 1156.
- on the influence of pressure and strain on the thermal coefficient of expansion of bodies, and on the relative behaviour of water and caoutchouc, 1876, ii., 41.
- the internal condition and latent heat of vapours, 1878, A., 194.
- sketch of the actinic theory of heat, 1879, A., 687.
- Pusirewski, Pl.**, nefediewite, a new mineral, 1873, 1210.
- Putte, P. van de**, germination of beet seeds, 1880, A., 730.
- Puttkammer, von** (and others), use of lupins as fodder, 1881, A., 116.
- Pyro, J.** See *J. Leyder*.

## Q.

- Quaglio, Julius**, water gas as the fuel of the future, 1882, A., 114.
- Quaiat, Enrico**, combustibility of tobacco, 1881, A., 68.
- Quehl, Max.** See *Hermann Adolph Köhler*.
- Quesneville, Georges.** See *Donato Tommasi*.
- Quincke, Georg Hermann**, on the electric currents produced by non-simultaneous immersion of mercury electrodes in different liquids, 1875, 414.
- glass impervious to gases, 1877, ii., 165.
- on the capillary angle and the spreading out of liquids on solids, 1878, A., 195.
- formation of emulsion and the influence of bile on digestion, 1879, A., 549.
- Quinquaud, Ch. Eugène**, the respiration of fishes, 1873, 929.
- estimation of hæmoglobin in blood, 1873, 1245.
- variations of hæmoglobin in the zoological series, 1873, 1245.
- estimation of urea by means of standard sodium hypobromite, 1881, A., 1085.
- Quinquaud, Ch. Eugène.** See also *Paul Schützenberger*.

## R.

- Raab, Alfred**, derivatives of cuminaldehyde, 1876, i., 398; 1877, ii., 894.
- Raabe, A.**, examination of urine for albumin, 1882, A., 342.
- Rabuteau, Antoine Pierre Athanase**, physiological action of quinic acid and of ferric chloride, 1873, 398.
- the leaves of *Eucalyptus Globulus*, 1873, 403.
- the toxic effects of the iodides of tetramethylammonium and tetramylammonium, 1873, 763.
- variations in the amount of urea excreted under the influence of caffeine, coffee, and tea, 1873, 1248.
- chemical analysis of jaborandi, 1875, 100.
- alcohols in potato fusel oil, 1879, A., 36.
- influence of ethyl iodide on germination, 1880, A., 915.
- Rabuteau, Antoine Pierre Athanase**, and **L. Ducoudray**, poisonous properties of calcium salts, 1873, 521.
- Rabuteau, Antoine Pierre Athanase**, and **Fernand Papillon**, antiseptic properties and physiological action of sodium silicate, 1873, 85, 400.

- Rabuteau, Antoine Pierre Athanase, and Fernand Papillon**, observations on some liquids of the organisms of fish, Crustaceans and Cephalopods, 1873, 1150.
- Rademacher, Paul**, preparation of sulphate of alumina for paper making, 1878, A., 618.
- Radenhausen, Paul**, human milk, 1882, A., 758.
- Radenhausen, Paul**. See also *Alexander I. Danilewsky*.
- Radianu, S. P.**, mechanical and chemical analyses of Roumanian soil, 1881, A., 935.
- Radloff, J.**, derivatives of  $\psi$ -cumene-sulphonic acid, 1878, A., 414.
- Radominski, Felice V. C.**, a cerium phosphate containing fluorine, 1874, 663.
- artificial formation of monazite and xenotime, 1875, 433.
- Radulowitsch, Wladimir**, formation of hydrogen dioxide by the oxidation of terpenes, 1874, 433; 1882, A., 798.
- Radziejewski, Sigismund Siegfried, and Ernst Leopold Salkowski**, formation of aspartic acid in pancreatic digestion, 1875, 375.
- Radziszewski, Bronislaw**, formation of stilbene, 1873, 889.
- action of bromine on boiling ethylbenzene, 1873, 1028.
- deoxybenzoin, 1873, 1037; 1875, 1190.
- constitution of phenylethyl bromide, 1874, 469.
- the relative positions of the side chains in Zincke's hydrocarbons, 1874, 470.
- phenylallyl, 1874, 798.
- action of sulphur on dibenzyl, 1875, 1190.
- phenylbutyls and phenylnaphthalene, 1876, i., 915.
- *n*-phenylethyl alcohol, 1876, ii., 78.
- phosphorescence of organic and organised substances, 1877, ii., 345; 1881, A., 488.
- reply to the remarks of E. Chevreul respecting the phosphorescence of organic bodies, 1877, ii. 863.
- constitution of lophine and allied compounds, 1877, ii., 887; 1882, A., 1063.
- Radziszewski, Bronislaw, and A. Sokolowski**, action of sulphur on barium benzoate, 1874, 476.
- Radziszewski, Bronislaw, and Paul Wispek**, derivatives of the three isomeric xylenes, 1882, A., 1283.
- Raetz, Th.**, enamel for cast and wrought iron, 1879, A., 755.
- Raffelt, R.**, aluminite from Mühlhausen near Kralup in Bohemia, 1881, A., 691.
- Raimondi, Carlo, and Giacomo Bertoni**, poisonous action of hydroxylamine, 1882, A., 1222.
- Raimondi, Carlo**. See also *Giacomo Bertoni*.
- Rajewsky, Arcadius**, occurrence of alcohol in the organism, 1876, i., 405.
- the quantitative estimation of haemoglobin in blood, 1876, ii., 216.
- Rákóczy, Sam.**, alcoholic vapour blow-pipe, 1873, 92.
- Rakowski, P. von**, the reduction of mononitronaphthoic acid, 1873, 391.
- Rakowski, P. von, and Wladislaus Leppert**, hydroquinonecarbonic acid, 1875, 1197.
- Ramann, E.**, passive state of iron, 1881, A., 872.
- decomposition of water by metallic iron, 1881, A., 879.
- Ramdohr, Ludwig**, superheated steam, 1879, A., 838.
- Ramme, G.**, sulphides of phosphorus, 1879, A., 691, 883.
- Rammelsberg, Carl Friedrich**, hypophosphites, 1873, 1.
- on the reducing power of phosphorous and hypophosphorous acids and their salts, 1873, 13.
- note on silicic acid, 1873, 242.
- the atomic weight of uranium, 1873, 247.
- spontaneously inflammable hydrogen phosphide from phosphonium iodide, 1873, 601.
- the atomic weights of the cerium metals and the salts of ceroso-ceric oxide, 1873, 601; 1877, i., 282.
- graphite, 1873, 732.
- behaviour of ozone towards water, 1873, 1103.
- constitution of vesuvian, 1873, 1107.
- the crystallographic and chemical relations of natural sulphides, arsenides, and sulpharsenides, 1874, 547.
- manganese epidote, 1874, 547.
- the crystalline form and molecular modifications of selenium, 1874, 769.
- on baryta and barium peroxide, 1874, 774.
- notes on analytical chemistry. 1. Estimation of arsenic. 2. Estimation of iodine in presence of chlorine. 3. Decomposition of certain sulphides by hydrochloric acid, 1874, 814.



- Rammelsberg, Carl Friedrich**, action of heat on potassium permanganate, 1875, 611.  
 — composition of the phosphites, 1877, i., 277.  
 — composition of cobalt speiss, 1877, ii., 176.  
 — aërinite and ginilsite, 1877, ii., 412.  
 — on the atomic weight of molybdenum and on certain phosphomolybdates, 1878, A., 14.  
 — on the determination of cuprous oxide present in copper, 1878, A., 92.  
 — pollucite and petalite from Elba, 1878, A., 387; 1881, A., 1005.  
 — nepheline, monazite, and silver-bismuth glance, 1878, A., 476.  
 — composition of aëschynite and samarskite, 1878, A., 944.  
 — on the determination of lithia by phosphate of soda, 1879, T., 18; A., 830.  
 — on the composition of lithia-micas, 1879, T., 19.  
 — behaviour of silicates containing fluorine, especially topaz and mica, at high temperatures, 1879, A., 772.  
 — the mica group, 1880, A., 224, 614; 1881, A., 533.  
 — vesbium and norwegium, 1880, A., 611.  
 — experimental researches on the amalgamation of silver ores, 1881, T., 374.  
 — composition of kjerulfine, 1881, A., 230.  
 — molecular properties of tin and zinc, 1881, A., 685.  
 — strychnine sulphate, 1881, A., 831.  
 — the vanadium minerals from Cordova State, Argentine Republic, 1881, A., 1000; 1882, A., 150.
- Ramsay, William**, preliminary note on antimony phosphide, 1874, 339.  
 — hydrogen persulphide, 1874, 857.  
 — sodium ethylthiosulphate, 1875, 687.  
 — on bismuthiferous tesselar pyrites, 1876, i., 153.  
 — dehydration of hydrates by the time method, 1877, ii., 395.  
 — on the volumes of liquids at their boiling points, obtainable from unit-volumes of their gases, 1879, T., 463.  
 — on the heat of formation of aniline, picoline, toluidine, lutidine, pyridine, dipicoline, pyrrol, glycerin, and furfural, 1879, T., 696.  
 — on picoline and its derivatives, 1879, A., 262.
- Ramsay, William**, on the volumes of some compounds of the benzene, naphthalene, anthracene, and phenanthrene series, 1881, T., 63.  
 — on the atomic volume of nitrogen, 1881, T., 66.  
 — critical state of gases, 1881, A., 971; 1882, A., 136, 267.
- Ramsay, William, and James Johnstone Dobbie**, on the decomposition products of quinine. 1st paper. Oxidation with permanganate, 1878, T., 102.  
 — on the decomposition products of quinine and the allied alkaloids. 2nd paper. Oxidation of quinine, quinidine (*conquinine*), cinchonine and cinchonidine with permanganate, 1879, T., 189.
- Ramsay, William**. See also *Carl Böttinger, Rudolph Fittig, David Orme Masson*.
- Rampacher**. See *Achille Müntz*.
- Ramsperger, Gustavus**, the detection of adulterations of *Oleum theobromæ*, 1877, ii., 931.
- Ranke, Heinrich**, spontaneous combustion of hay, 1874, 707.
- Ranke, Johannes**, researches on the electricity of plants, 1873, 713.
- Raoult, François Marie**, action of a copper-cadmium couple on a solution of cadmium sulphate, 1873, 464.  
 — apparent replacement of certain metals by themselves in their solutions, 1873, 464.  
 — conversion of cane sugar into glucose by the action of light, 1873, 490.  
 — action of gaseous ammonia on ammonium nitrate, 1873, 1201; 1882, A., 800.  
 — absorption of ammonia by saline solutions, 1874, 224, 1058.  
 — use of gas-carbon in the distillation of sulphuric acid, 1875, 485.  
 — simple apparatus for the analysis of gases, 1876, ii., 213.  
 — influence of carbonic acid on the respiration of animals, 1876, ii., 318.  
 — vapour tension and solidifying point of saline solutions, 1879, A., 4.  
 — freezing point of alcoholic liquids, 1880, A., 523.  
 — action of dry carbonic anhydride on quick lime, 1881, A., 348.  
 — action of carbonic anhydride, on barium and strontium oxides, 1881, A., 878.  
 — basic calcium carbonate, 1882, A., 695.

- Raoult, François Marie**, congelation of solutions of neutral compounds in benzene, 1882, A., 1260.
- Raoult, François Marie, and Henri Breton**, detection of zinc and copper in the human body, 1877, ii., 928.
- Rasenack, Paul**, on a hydrocarbon from the least volatile portions of coal tar, 1874, 259.
- Rasiński, Faustina**, condensation products of phenols and acetic acid, 1882, A., 1288.
- Rath, Gerhard vom**, the chemical composition of humite, 1873, 142.
- outcasts of leucite from Vesuvius, 1873, 146.
- on a mineral resembling cyanite in the Rhenish basalts, 1873, 248.
- two calcio-sodic feldspars from the Ural, 1873, 249.
- mineralogical notices: tridymite, quartz, nepheline, 1873, 250.
- on a meteorite which fell at Ibbenbüren in Westphalia, 1873, 255.
- crystallographic description of anorthite, 1873, 257.
- crystalline form of dibenzyl and of stilbene, 1873, 383.
- the twin laws of anorthite, 1873, 857.
- the crystalline system of leucite, 1873, 1007.
- microsommitte, 1874, 30.
- on the new crystallised form of silica (*asmanite*) discovered by Maskelyne in the Breitenbach meteorite, 1874, 554.
- iridescent quartz, 1874, 555.
- foresite, a new mineral of the zeolite family from the granite veins of Elba, 1874, 1066.
- on the constitution of triclinic feldspars, 1875, 742.
- occurrence of monticellite crystals in association with anorthite on the Pesmeda Alp, on Mount Monzoni in Tyrol, 1875, 869.
- the phacolite of Richmond, Victoria, Australia, 1876, i., 885.
- a new development of anatase crystals from Cavradi (in the Tavetsch), 1876, i., 886.
- mineralogical notices: 1. Chemical composition of the yellow augite from Vesuvius; 2. A brookite crystal from the gold washings of Atliansk, in the Urals; 3. Remarkable sanidine crystals found in drusy spaces in the dolomitic lava of Bellingén, Westwald, 1876, ii., 53.
- Rath, Gerhard vom**, a new combination of Elba calcite and a rare development of a crystal of calcite from Oberstein, 1877, ii., 170.
- the syenite mountains of Ditro, 1877, ii., 172.
- pyrrargyrite from Andreasberg, 1877, ii., 173.
- gold from Vöröspatak, 1877, ii., 279.
- the tridymite-bearing andesite of Gereceses, 1877, ii., 280.
- rutile from the Binnenthal, after specular iron (iron glance), 1877, ii., 856.
- a chalcedony amygdaloid filled with water, 1877, ii., 860.
- the rhombic crystals of sulphur obtained by fusion, 1877, ii., 860.
- a peculiar twin formation of cobalt-speiss, 1878, A., 117.
- some minerals formed by the volcanic vapours of Vesuvius, 1878, A., 475.
- pandernite (a mineral discovered by Mueck), 1878, A., 710.
- rose-red anorthite from the Pesmeda Alp, 1878, A., 713.
- quartz crystals from Kremnitz; crystallographic observations on the copper of Lake Superior: unusual and anomalous faces on garnet from the Pfitscher Thal in Tyrol, 1878, A., 944.
- crystals of amazon-stone (*microcline*) from Pike's Peak, Colorado, 1879, A., 515.
- pseudomorphs of calcite after aragonite, 1880, A., 15.
- crystal system of cyanite, 1880, A., 534.
- mineralogical contributions: 1. Hannayite; 2. Newberyite, 1881, A., 231.
- mineralogical contributions, 1881, A., 548.
- Rath, Gerhard vom**. See also *Woldemar Christoffer Brögger, Augustin Alexis Damour, Carl Theodor Liebermann*.
- Rathke, Bernhard**, perchlorinated methyl mercaptan, 1873, 262.
- action of carbon sulphochloride and perchlorinated methyl mercaptan on aniline, 1873, 263.
- sulphuretted dicyanodiamine, 1879, A., 41.
- phenylthiocarbamic acid, 1879, A., 54.
- dignanidine, 1879, A., 781.
- aromatic thiocarbamides, 1879, A., 804.

- Rathke, Bernhard**, action of phenylthiocarbimide on diphenylguanidine, 1879, A., 804.  
 — derivatives and constitution of thiocarbamide, 1882, A., 166.
- Rathke, Bernhard**, and **P. Schäfer**, action of carbon sulphochloride on amides, 1874, 163.
- Rau, Henry M.**, benzolone and benzostilbene, 1881, A., 591.
- Rauff, Herm.**, chemical composition of nepheline, cancrinite, and microsomite, 1879, A., 606.
- Raulin, Jules**. See **Emile Duclaux**.
- Raumer, Ernst von**, lias rocks of France, 1878, A., 955.  
 — estimation of phosphoric acid in ashes of plants, 1882, A., 553.
- Raumer, Ernst von**, and **Christoph Kellermann**, lime in plant life, 1880, A., 568.
- Rautenberg, Paul**. See **Adolph Claus**.
- Rautert, August**, preparation of snow-white salicylic acid from the crude acid, 1875, 1023.
- Rayleigh, John William Strutt**, (Lord) and **Arthur Schuster**, determination of the ohm in absolute measure, 1881, A., 963.
- Rayman, Bohuslav**, condensation products of the homologues of benzene, 1877, i., 459.  
 — *o*-toluic aldehyde, 1877, ii., 894.
- Rayman, Bohuslav**. See also **Karl Preis**.
- Raymond, Rossiter W.**, fused spiegeleisen instead of ferromanganese in the Bessemer process, 1876, i., 453.  
 — decarbonisation of spiegeleisen by heat, 1876, ii., 225.  
 — the dunite of the Jenks Mine, Macon Co., N. Carolina, 1881, A., 540.
- Raynaud, Jules**, resistance of galvanometers, 1873, 839.  
 — condition of maximum magnetic effect in galvanometers and electromagnets, 1873, 839.
- Reboul, Edmond**, various propylene chlorides, 1873, 1015.  
 — propylene chlorobromides and a method of preparing pure propyl glycol, 1874, 976.  
 — ethers of *n*-propyl glycol, 1874, 1153.  
 — constitution of ordinary bromopropylene, 1875, 50.  
 — a new chloropropylidene, 1876, i., 894.  
 — *n*-pyrotartaric acid, 1876, ii., 286.
- Reboul, Edmond**, derivatives of *n*-pyrotartaric acid, 1876, ii., 507.  
 — synthesis of the acids  $C_nH_{2n-2}O_2$  and  $C_nH_{2n-4}O_2$  (allyl- and diallyl-acetic acids), 1877, ii., 593; 1879, A., 372.  
 — isomerism in the propyl or tri-carbon series, 1879, A., 127.  
 — ethylidene chlorobromide, 1879, A., 369.  
 — wine from raisins, 1881, A., 198.  
 — action of triethylamine on the monohaloid paraffin derivatives from secondary and tertiary alcohols, 1881, A., 1024.  
 — action of methylamine on epichlorhydrin, 1881, A., 1122.  
 — tertiary amines: influence of heat on allyltriethylammonium bromide, 1882, A., 709.
- Reboul, Edmond**, and **Edme Alfred Bourgoin**, electrolysis of pyrotartaric acid, 1877, ii., 442.  
 — conversion of pyrotartaric acid into dibromopyrotartaric and dibromosuccinic acid, 1877, ii., 592.  
 — *n*-propylene, 1877, ii., 728.
- Reboux**, note on yellow amber, 1877, ii., 903.
- Rebuffat, Orazio**, barium and calcium cinnamates, 1881, A., 598.
- Rechenberg, Carl von**, action of iodine on guanidine carbonate and on nitrosoguanidine, 1878, A., 719.  
 — heat absorption attending the solution of potassium chloride in water, 1879, A., 588.  
 — heat of combustion of carbon compounds, 1881, A., 10, 135.  
 — proportion of free fatty acids in vegetable and animal fats, 1882, A., 239.
- Recknagel, Georg**, physical properties of carbonic acid, 1873, 590.
- Redman, Jesse Gustavus**, protective coating for ships' bottoms, 1876, i., 131.
- Redwood, Theophilus**, determination of the melting points of butter and other fats, 1876, ii., 595.  
 — diffusive properties of some preparations of iron, 1880, A., 768.
- Reese, August**. See **Carl Arnold August Michaelis**.
- Regel, Edouard**, on two varieties of the *Drosera*, 1880, A., 820.
- Regensburger, Martin**, action of sulphur on the excretion of sulphuric acid in the urine, 1877, ii., 911.
- Regnard, Paul**, presence of free ammonia in cast steel, 1877, ii., 169.
- Regnard, Paul**. See also **Paul Bert**.

- Regnauld, Jules**, some physical properties of quinine, 1876, i., 271.  
 — chloroform as an anæsthetic, 1879, A., 747.  
 — production of carbon oxychloride from chloroform, 1882, A., 935.
- Regnauld, Jules**, and **Ernest Hardy**, action of bleaching powder on propyl, butyl and amyl alcohols, 1880, A., 356.
- Regnault, Henri Victor**, obituary notice of, 1878, T., 235.
- Regnon, de**, on the passive condition of iron, 1874, 1127.
- Rehs, G.**, phenanthrol, 1878, A., 76.
- Rehs, G.** See also *Heinrich Hermann Salkowski*.
- Reibstein, T.**, comenic acid, 1882, A., 197.
- Reichardt, Eduard**, neutral calcium phosphate, 1873, 353.  
 — apparatus for the determination of gases in liquids, 1873, 412.  
 — on some mineral waters containing iron, 1873, 741.  
 — on some mineral springs of Java containing iodine, 1873, 741.  
 — what constitutes pure water? 1873, 1065.  
 — antique bronze, 1873, 1201.  
 — separation of uranium oxide from phosphoric acid, 1873, 1260.  
 — separation of phosphoric from molybdic acid, 1873, 1260.  
 — contamination of water by copper pipes, 1874, 97.  
 — sausages coloured by aniline, 1874, 98.  
 — composition of extract of meat, 1874, 499.  
 — preparation of iodates and of iodic acid, 1874, 1133.  
 — porphyry and kaolin, 1875, 434.  
 — pararabin, 1875, 1179.  
 — air and water, 1876, i., 354.  
 — oxidation of organic bodies, 1876, i., 363.  
 — boiling point and specific gravity of chloroform, 1876, i., 363.  
 — preparation of uric acid from guano, 1876, i., 379.  
 — occurrence of dextrin in urine, 1876, i., 410.  
 — recognition of blood stains, 1876, i., 782.  
 — nutritive value of the cellular tissue of plants, 1877, ii., 347.  
 — differences observed in unadulterated milk, 1877, ii., 373.  
 — on the pectin group, 1877, ii., 502.  
 — investigations on food, 1877, ii., 517.
- Reichardt, Eduard**, detection of glycerin in wine, 1877, ii., 939.  
 — examination of wine as to the presence of glycerin, colouring matter, etc., 1878, A., 93.  
 — investigation of beers especially in relation to acidity, 1878, A., 347.  
 — uranium pitchblende from Joachimsthal, 1879, A., 18.  
 — a boron mineral from Chili, 1879, A., 19.  
 — detection of chloroform, 1879, A., 280.  
 — distribution of fungus, 1879, A., 479.  
 — analysis of the water of the mineral spring at Suhl, 1879, A., 516.  
 — action of water on lead piping, 1880, A., 198.  
 — purification of refuse water, 1880, A., 830.  
 — investigation of the composition of soil from a graveyard, 1880, A., 920.  
 — wild and cultivated raspberries, 1880, A., 936.  
 — examination of the Grosslüder mineral spring at Salzschlirf, 1881, A., 29.  
 — detection and estimation of arsenic, 1881, A., 195.  
 — mother liquor of the Allendorf-a-Werra salt works, 1882, A., 24.  
 — detection of poisoning by hydrocyanic acid after a long time, 1882, A., 246.  
 — peat moss from Bad Steben bei Hof, 1882, A., 644.  
 — plastering of wine, 1882, A., 661.
- Reichardt, Eduard, Hünefeld, and Julius Hertz**, formation of nitric acid in the soil, 1880, A., 59.
- Reichardt, Eduard** (and others), decomposition products of sugar, 1880, A., 864.
- Reiche, H. von**, two azobenzenedisulphonic acids, 1880, A., 805.
- Reichel, Friedrich Gustav**, sulphur compounds of magnesium and aluminium, 1876, i., 43.  
 — qualitative separation of cobalt from nickel, 1881, A., 194.  
 — estimation of arsenic as magnesium pyroarsenate, 1881, A., 467.
- Reichenbach, Reinhold (Freiherr) von**, carbonisation of wood in closed vessels, 1874, 1119.
- Reichert, E.**, simplification of Helmer's method of testing butter, 1879, A., 406.
- Reichl, C.**, some new phenol colours, 1877, i., 310; 1880, A., 426.



- Reihlen, F. Adolf** (and others), improvements in the manufacture of wine, 1882, A., 905.
- Reilly, C. W.** See **Reginald Lawrence**.
- Reimann, M.**, grenade, a new dye stuff, 1873, 208.
- nature of the black spots produced in dyeing with cochineal, 1873, 657.
- dyeing of feathers, 1873, 1069.
- Aachen indigo, 1876, i., 988.
- precipitated sulphur in dyeing wool with eosin, 1878, A., 356, 824.
- valuation of body colours, 1879, A., 179.
- chrome-black on wool, 1879, A., 572.
- Reimer, Carl**, new mode of formation of aromatic aldehydes, 1876, ii., 82.
- Reimer, Carl**, and **Ferdinand Tiemann**, action of chloroform on alkaline phenolates, 1876, ii., 632.
- action of carbon tetrachloride on phenol in alkaline solutions, 1877, i., 77.
- action of chloroform on aromatic cyanides in alkaline solution, 1877, i., 83.
- Reimer, Carl**. See also **Ferdinand Tiemann**.
- Reimer, Carl Ludwig**, reduction of aldehydo-oxybenzoic acids to alcoholic acids, 1878, A., 880.
- action of chloroform on  $\alpha$ - and  $\beta$ -oxyisophthalic acids in alkaline solution, 1878, A., 881.
- $\alpha$ -toluyllamide, 1881, 43.
- action of bromine on benzyl cyanide and on phenylacetic acid at high temperatures, 1881, A., 47.
- action of bromine on benzyl cyanide, 1882, A., 169.
- two isomeric dibenzylidicarboxylic acids, 1882, A., 200.
- Reimer, Carl Ludwig**. See also **Ferdinand Tiemann**.
- Reincke, J.** See **Otto Wallach**.
- Reinders, Geert**, composition and nutritive and manurial values of kapok cake, 1877, i., 105.
- action of sea water upon land, 1877, i., 106.
- Reinecke, A.**, and **G. F. Meyer**, estimation of the decolorizing power of animal charcoal, 1880, A., 422.
- Reingruber, Joh. Friedrich**, methyl-naphthalene, 1881, A., 436.
- Reingruber, Joh. Friedrich**. See also **August Emmert**.
- Reinhard, Georg**, action of sulphuryl chloride on resorcin and on ethylene glycol, 1878, A., 222, 726.
- Reinhardt, Heinrich**, and **Rudolf Ihle**, electrolytic estimation of zinc, 1881, A., 1170.
- Reinherz, Hermann**. See **Karl Birnbaum**.
- Reinitzer, Benjamin**, solid compound of boron and hydrogen, 1881, A., 507.
- the anhydride of phosphorous acid, 1882, A., 140.
- reactions of the acetates of chromium, iron, and aluminium, 1882, A., 825.
- Reinitzer, Benjamin**, and **Heinrich Goldschmidt**, action of certain metals and non-metals on phosphorus oxychloride, 1880, A., 609.
- Reinitzer, Friedrich**, the physiological signification of transpiration in plants, 1882, A., 327.
- analysis of a vegetable fat, 1882, A., 886.
- Reinke, Johann**, aldehyde-like substances in the cells of plants containing chlorophyll, 1882, A., 243.
- assimilation theoretically considered, 1882, A., 1312.
- Reinke, Johann**, and **G. Berthold**, dry and wet rot in potatoes, 1880, A., 416.
- Reinke, Johann**, and **Hermann Rodewald**, *p*-cholesterin from *Æthaliu septicum*, 1882, A., 303.
- Reinke, Johann**. See also **Hermann Rodewald**.
- Reinke, Otto**, on a tribromobenzene-sulphonic acid, 1877, ii., 461.
- Reinsch, Hugo**, coal, 1881, A., 107.
- manganese dioxide containing antimony, 1881, A., 141.
- detection of boric acid, etc. by means of the microscope, 1882, A., 245.
- Reinsch, Paul Friedrich**, cyprusite, a new mineral, 1882, A., 578.
- Reis, Moritz Adolf von**, use of oxalates in analysis, 1881, A., 843.
- specific heat of organic compounds and its relation to the molecular weight, 1881, A., 963.
- Reis, Moritz Adolf von**. See also **Alexander Classen, Wilh. Halberstadt**.
- Reischauer, Carl G.**, beer analyses, 1877, ii., 953.
- juglone (*nucin*), 1878, A., 233.
- analyses of several malting barleys, 1882, A., 672.
- analyses of various Munich yeasts, 1882, A., 1146.
- Reisenbichler, G. F.**, sulphuric acid in beer, 1882, A., 556.

- Reiset, Jules**, the proportion of carbonic anhydride in the air, 1879, A., 744; 1880, A., 605; 1881, A., 19.
- Reitlinger, Edmund**, and **Friedrich Wächter**, disintegration of electrodes by positive electricity and explanation of Lichtenberg figures, 1882, A., 448.
- Rembold, Otto**, some derivatives of ellagic acid, 1876, i., 592.
- Remi, N.**, preparation of ethyl dibromacetate, 1875, 1004.
- Remmers, Ludwig**, new brominated derivatives of aniline, 1874, 696.
- Remmers, Ludwig**. See also **Rudolf Biedermann**.
- Rémont, Albert**, analysis of heavy mineral, resin, and fatty oils, and of resin in commercial oils, 1880, A., 683; 1881, A., 202.
- action of flame on platinum, 1881, A., 882.
- estimation of salicylic acid in beverages, 1881, A., 944.
- separation of wool and silk in textile fabrics, 1881, A., 1177.
- Rémont, Albert**. See also **Alfred Riche**.
- Remsen, Ira**, isomeric sulphosalicylic acids, 1874, 1167; 1876, i., 594.
- action of potassium on ethyl succinate, 1875, 1251; 1876, i., 564.
- nitro-*p*-sulphobenzoic acid, 1875, 1263.
- formation of *p*-toluic acid from *p*-sulphotoluenic acid, 1875, 1264.
- *p*-sulphobenzoic acid, 1876, i., 257.
- action of phosphorus pentachloride on the compound  $C_{12}H_{16}O_6$ , 1876, i., 697.
- phosphorus oxychloride, 1877, i., 685.
- constitution of xylenesulphonamides, 1878, A., 56, 505.
- a lecture experiment, 1878, A., 370.
- oxidation of xylenesulphonamides, 1879, A., 248.
- oxidation of sulphamine-*m*-toluic acid, 1880, A., 473.
- deposition of copper on iron in a magnetic field, 1881, A., 962.
- conduct of finely divided iron towards nitrogen, 1881, A., 1104.
- transformation of ozone into oxygen by heat, 1882, A., 690.
- Remsen, Ira**, and **William J. Burney**, sulphoterephthalic acid, 1881, A., 819.
- Remsen, Ira**, and **Robert Dorsey Coale**, anhydrosulphonamidoisophthalic acid, 1880, A., 258.
- Remsen, Ira**, and **Mitsuru Kuhara**, conduct of nitro-*m*-xylene towards oxidising agents, 1882, A., 607.
- Remsen, Ira**, and **William Albert Noyes**, oxidation of substitution products of aromatic hydrocarbons, 1882, A., 1196.
- Remsen, Ira**, and **Chase Skeele Palmer**, oxidation of *m*-toluenesulphonamide, 1882, A., 1095.
- Remsen, Ira**, and **Mase Shepard Southworth**, action of ozone on carbonic oxide, 1876, i., 341.
- Remsen, Ira**. See also **Robert Dorsey Coale**, **Constantin Fahlberg**, **Rudolph Fittig**, **Lyman Beecher Hall**, **Edward Hart**, **Malvern Wells Iles**, **Harmon Northrup Morse**.
- Renard, Adolphe**, preparation of passive iron, 1874, 1128.
- the passivity of iron, 1874, 1128.
- action of electrolytic oxygen on ethyl alcohol, 1875, 440.
- action of electrolytic oxygen on methyl alcohol, 1875, 552.
- action of electrolytic oxygen on glycerin, 1875, 1249; 1876, ii., 64.
- action of electrolytic oxygen on glycol, 1877, ii., 300.
- oxidation of alcohols by electrolysis, 1880, A., 24.
- electrolysis of terebenthene, 1880, A., 479.
- electrolysis of benzene, 1880, A., 802.
- products of the distillation of colophony, 1880, A., 893; 1881, A., 738; 1882, A., 737, 1179, 1301.
- electrolysis of toluene, 1881, A., 721.
- essence of rosin, 1882, A., 64.
- Renard, Adolphe**. See also **Auguste Houzeau**.
- Renaud, Gros**, chromic oxide as a mordant, 1874, 1191.
- Renault, Bernard**, application of the reduction of silver salts to the reproduction of designs, 1873, 537.
- combinations of phosphorus with zinc and cadmium, 1873, 728.
- Rennesse, Jean Jacques van**, composition of the volatile oil of *Pastinaca sativa*, 1873, 642.
- octylic and caprylic acids, 1874, 1155.
- action of silver nitrite on benzyl iodide, 1877, i., 310.
- action of potassium cyanide on the isomeric *o*-nitro-*m*-bromobenzoic acids, 1877, i., 311.

- Renk, Friedrich Georg**, the amount of matter excreted by the lungs in various diseases, 1875, 902.  
 — permeability of soil for air, 1880, A., 221.
- Rennard, Eduard**, the active principle contained in the aqueous extract of cantharides, 1873, 511.  
 — contributions to forensic chemistry: detection of prussic acid, 1874, 715.  
 — chemical valuation of pepsin, 1875, 1296.  
 — separation of the alkaloids, 1877, ii., 230.
- Renner, Gustav**. See *Karl Zulkowski*.
- Rennie, Edward Henry**, on New Zealand kaori gum, 1881, T., 240.  
 — on a new derivative of quinine, 1881, T., 469.  
 — double salts of meconic acid, 1881, A., 418.  
 — acids of the Australian currant (*Leptonerica acida*), 1881, A., 1033.  
 — note on the action of ethyl chloro-carbonate on benzene in presence of aluminium chloride, 1882, T., 33.  
 — on benzylphenol and its derivatives, 1882, T., 33, 220.
- Rennie, Edward Henry**. See also *Charles Ronlsey Alder Wright*.
- Renouard, Alfred**, analysis of silk cocoons, 1879, A., 952.  
 — steeping hemp, 1881, A., 132.
- Renouard, Alfred**, and *Benjamin Corenwinder*, linseed cake and hemp cake and their adulteration, 1882, A., 84.
- Renouf, Edward**, dimethylhydrazine, 1881, A., 151.
- Renouf, Edward**. See also *Emil Fischer*.
- Renoul, Honoré**. See *Victor Urbain*.
- Reoch, James**, murexan, 1876, i., 569.
- Retschy, Hermann**. See *Hans Hübner*.
- Reusch, Friedrich Eduard von**, theory of twin crystals, 1873, 257.  
 — appearances produced in calespar by pressure, 1873, 257.  
 — on diffusion between dry and moist air, 1875, 127.
- Reusch, Hans H.** See *Woldemar Christofer Brögger*.
- Reuss**, injurious effect of furnace gases on the woods of the Upper Harz, 1881, A., 1064, 1179.
- Reuter, Aug.**, on  $\psi$ -cumol and the constitution of  $\psi$ -cumenesulphonic acid, durene, etc., 1878, A., 413.
- Reuter, François**, monethylenediphenylthydiamine, 1875, 649.
- Reverdin, Frédéric**, chrysolin, a new yellow dye derived from resorcin, 1877, ii., 889.
- Reverdin, Frédéric**, and *Emilio Nölting*, the  $\alpha$ - and  $\beta$ -positions in naphthalene, 1880, A., 399.
- Reverdin, Frédéric**. See also *Prosper Monnet*.
- Reyer, Eduard**, hard bronze of the ancients, 1882, A., 805.
- Reymann, S.**, derivatives of secondary butyl alcohol, 1875, 141.  
 — testing bromine for bromoform, 1875, 1288.  
 — volumetric determination of orein in the archil lichens, 1875, 1293.  
 — a product obtained by the action of aqua regia on oreinol, 1880, A., 645.
- Reynaud, H.**, estimation of glycerol in wine, 1880, A., 512.
- Reynier, Emile**, constant and powerful voltaic piles, 1880, A., 686.  
 — Faure's secondary electric pile, 1881, A., 671.  
 — efficiency of secondary piles, 1881, A., 868.
- Reynolds, James Emerson**, superphosphates, their adulterations and valuation, 1873, 530.  
 — glucinum, its atomic weight and specific heat, 1877, i., 579.  
 — composition of lievrite as determined by Early's method, 1877, ii., 716.  
 — rapid estimation of urea, 1878, A., 448.  
 — sugar as a test of the purity of water, 1879, A., 1062.  
 — note on a convenient apparatus for the liquefaction of ammonia, 1882, T., 259.
- Reynolds, John William**, obituary notice of, 1876, i., 620.
- Reynolds, Osborne**, condensation of a mixture of air and steam on cold surfaces, 1873, 1001.  
 — effect of acid on the interior of iron wire, 1874, 546.  
 — on the surface forces caused by the communication of heat, 1875, 329.  
 — on drops floating on the surface of water, 1882, A., 5.
- Reynoso, Alvaro**, preservation of alimentary substances, 1876, i., 824.
- Rhalis, Miliakos**, *o*-bromobenzoic acid, 1880, A., 118.
- Rhem, F.**, East Indian gum, 1876, i., 366.
- Rhien, Ferd.**, preparation of potassium ferrieyanide, 1873, 282, 380.

- Rhousopoulos, Otto.** See *Karl Kraut.*
- Riban, Joseph,** terebene, 1873, 1137.
- on terebene hydrochloride and a method of distinguishing from one another the isomeric bodies having the formula  $C_{10}H_{16}HCl$ , 1874, 153; 1875, 1193.
  - the physical properties of terebene and terebenthene, 1874, 580.
  - *isoterebenthene*, 1874, 1162.
  - tetraterebenthene, a solid polymeride of essence of turpentine, 1875, 61.
  - physical properties of *isoterebenthene*, 1875, 62.
  - camphenes, 1875, 1192.
  - transformation of lauril camphor into camphene, and the inverse transformation, 1875, 1192; 1876, i., 245.
  - compounds of hydrogen phosphide with euprons chloride and its estimation in gaseous mixtures, 1879, A., 503.
  - decomposition of some metallic acetates in presence of water, 1882, A., 388.
  - decomposition of metallic formates in presence of water, 1882, A., 491.
- Ricciardi, Leonardo,** composition of the ashes of the trunk, leaves, and fruit of the orange and mandarin orange, 1880, A., 915.
- comparison of diseased and sound lemon trees, 1881, A., 300.
  - lavas from the neighbourhood of Catania, 1881, A., 701.
  - on flint, 1881, A., 1003.
  - deposits of volcanic tufa in the province of Salerno, 1882, A., 371.
  - phosphoric acid in volcanic soils, 1882, A., 550, 650.
  - volcanic ash from Etna, Jan. 23, 1882, 1882, A., 705.
  - chemical researches on the calcareous rocks of the province of Salerno, 1882, A., 811.
  - chemical composition of Vesuvian pumices collected on Monte Sant' Angelo, 1882, A., 814.
  - ash ejected from Vesuvius, Feb. 25, 1882, 1882, A., 932.
  - crystalline rocks in the neighbourhood of Messina, 1882, A., 1177.
  - origin of volcanic ashes, and chemical composition of the lavas and ashes ejected in the latest eruptions of Vesuvius (1868—1882), 1882, A., 1177.
- Ricciardi, Leonardo,** and **Sebastiano Speciale,** the basalts of Sicily, 1882, A., 152.
- Rice, Charles,** oleate of mercury and morphine, 1873, 510.
- preparation of iodides and bromides, 1873, 1101.
  - new formation of iodoform, bromoform, etc., 1877, ii., 423.
- Rich, Sidney W.,** cheap saline disinfectants, 1873, 308.
- utilisation of alum shale, 1874, 195.
  - note on water analysis, 1876, ii., 554.
- Richard, Adolphe,** minerals of the Sarabus mine, Sardinia, 1881, A., 359.
- Richard, Aug.,** bases of the pyridine series, 1880, A., 480.
- Richard, Aug., and Armand Bertrand,** magnesium and potassium platino-cyanide, 1881, A., 240.
- Richards, (Mrs.) Ellen H. Swallow,** and **Alice W. Palmer,** antimony tannate, 1879, A., 933.
- Richards, (Mrs.) Ellen H. Swallow.** See also *Margaret S. Cheney.*
- Richards, Josiah.** See *Robert Lavender.*
- Richardson, Clifford,** separation and determination of potash and soda by the indirect method in plant ashes, fertilisers, and similar substances, 1882, A., 658.
- composition of American grasses, 1882, A., 762.
- Riche, Alfred,** researches on alloys, 1874, 776.
- estimation of manganese, lead, copper, zinc, and nickel, and their alloys, 1877, ii., 924; 1878, A., 750.
  - on the frequent occurrence of cupric acetate in vinegar and on the estimation of copper, 1877, ii., 927.
  - bismuth subnitrate, 1878, A., 841; 1881, A., 141.
  - action of light on silver chloride, 1879, A., 694.
  - waters of Bourbonle, 1880, A., 455.
  - margarine, a substitute for butter and lard, 1881, A., 209.
  - purification of commercial alcohol, 1882, A., 1013.
- Riche, Alfred,** and **Charles Bardy,** on the sulphur and other flames utilisable in photography, 1875, 669.
- detection of methyl alcohol in ethyl alcohol, 1875, 1292.
  - detection of ethyl alcohol in mixtures, especially in presence of wood spirit, 1876, ii., 327.
  - researches on the commercial analysis of unrefined sugars, 1876, ii., 662.



- Riche, Alfred**, and **Albert Rémont**, *Bassia longifolia*, 1880, A., 519.
- Richet, Charles**, acidity of human gastric juice: observations on digestion made through the agency of a gastric fistula, 1877, ii., 631.
- acid of gastric juice, 1877, ii., 910; 1878, A., 520.
- lactic fermentation of milk sugar, 1878, A., 567.
- conditions of lactic fermentation, 1879, A., 663.
- fermentation of urea, 1881, A., 1059.
- Richet, Charles**, and **Gustave Bouchardat**, chlorinated derivatives of strychnine, 1881, A., 292.
- Richet, Charles**, and **Robert Moutard-Martin**, action of urea and ammonium salts on animals, 1882, A., 760.
- Richter, Karl**, composition of cell membranes of bacteria, 1882, A., 80.
- Richter, M. M.**, dinaphthylmethane, 1881, A., 281.
- alkalimetric titration of potassium dichromate, and its use in alkalimetry, 1882, A., 1233.
- alkaline reaction of potassium chromate, 1882, A., 1268.
- action of potassium dichromate on potassium iodide, 1882, A., 1268.
- Richter, M. M.**, and **Paul Richter**, mercurous chromates, 1882, A., 1029.
- Richter, Richard**, action of phosphorus oxychloride on neutral and basic sodium and potassium salicylates, 1882, A., 618.
- Richter, Richard**, and **Adolf Hübner**, comparison of the American silver dry assay with the wet assay, 1874, 1009.
- Richter, Victor von**, isomeric series of benzene derivatives, 1873, 1224.
- action of sodium formate on benzoic acid, 1873, 1238.
- synthesis of aromatic acids, 1875, 73.
- action of potassium cyanide on substituted nitro-compounds, 1876, i., 387.
- substitution derivatives of benzene (*tetrabromobenzene*, etc.), 1876, i., 390.
- conversion of amido-compounds into brominated compounds, 1876, i., 390.
- researches on ketonic acids, 1877, ii., 439.
- action of phosphorus pentachloride on ethyl oxalate, 1879, A., 138.
- action of nitric acid on epichlorhydrin, 1880, A., 32.
- synthesis of the closed benzene ring, 1880, A., 37.
- Richter, W.**, adulteration of malt combings, 1880, A., 777.
- Richters, E.**, and **G. Juncker**, contributions to our knowledge of chloride of lime, 1874, 825.
- Rickman, James Pellatt**, manufacture of ammonia, 1879, A., 496.
- Rickman, James Pellatt**, and **Jacob Baynes Thompson**, ammonia from the nitrogen of the atmosphere and the hydrogen of water, 1880, A., 767.
- Rickmann, Rudolf**, constitution of ultramarine, 1879, A., 203, 1014.
- Ridolfi, (Marchese) Luigi**, manuring of field beans, 1880, A., 569.
- Ridout, Roland H.**, valve for gases and corrosive liquids, 1874, 538.
- Riebe, A.**, experiments on various kinds of yeast, 1880, A., 833.
- Riecke, Carl Victor Eduard**, the electromotive power of a Grove's element in terms of Siemens-Weber units, 1879, A., 998.
- Riedel, Carl**, constitution of nitrosodimethyl-*m*-toluidine, 1880, A., 386.
- Riedel, Carl**. See also **Casimir Wurster**.
- Riegler, Währmund**, permeation of vegetable matter by water, 1880, A., 823.
- descent of rain water down tree stems, 1881, A., 61.
- Riemsdijk, A. D. van**, flashing in assays of gold, 1880, A., 693.
- influence of superfusion on the molecular arrangement of cupelled gold, 1880, A., 773.
- Riese, F.**, action of sodium on crystalline dibromobenzene, 1873, 62.
- $\beta$ -dibromobenzene, 1873, 63.
- Riess, E. Richard**, composition of eclogite, 1880, A., 16.
- Riffard, Edmond**, estimation of sugar by means of iron, 1874, 292, 714.
- Rigaut, A.** See **Henri Lescœur**.
- Rigo, E.**, Warner's method for refining pig iron, 1876, i., 792.
- Riley, Edward**, on the estimation of manganese in spiegeleisen, and of manganese and iron in manganiferous iron ores, 1877, ii., 1.
- estimation of phosphorus in iron and steel, 1878, T., 104.
- Rilliet, Albert A.**, and **Emil Ador**, constitution of benzene, 1876, ii., 383.
- Rilliet, Albert A.** See also **Emil Ador**, **Victor Meyer**, **J. Louis Soret**.
- Rimarenko, Vladimir**, on  $\beta$ -chloronaphthalene, 1876, ii., 297.
- Rimmington, Felix Marsh**, conversion of alcohol into ethyl acetate by the (supposed) agency of cryptogamic life, 1875, 284.

- Rimington, Felix Marsh**, analysis of coffee, 1881, A., 473, 1177.
- Rimpau, Wilhelm**, fertilization of rye, 1880, A., 493.
- Rinne, Albert**, a compound of allyl cyanide and ethylic alcohol, 1873, 879.
- on ethyl- and diethyl-allylamines, 1874, 50.
- ultramarine, 1879, A., 885.
- Rinne, Albert**, and **Ernst Carl Theodor Zincke**, a new dinitrobenzene, 1874, 1163.
- *o*-dinitrobenzene, 1875, 255.
- Rinne, Albert**. See also *August Friedrich Kekulé*.
- Riobinine**. See **Rjabinin**.
- Ripping, A.**, artificial laurel water, 1877, ii., 241.
- Rischawi, Ludwig Albertovich**, experiments on the respiration of plants, 1877, i., 331.
- Risler, Ch.** See **Paul Schützenberger**.
- Risler, Eugène**, amount of carbonic anhydride in the atmosphere at Calvès, near Nyon, 1882, A., 1026.
- Risler, Eugène**. See also **Adolph Claus**.
- Risler, Jean**, on some compounds analogous to chrome iron, 1878, A., 936.
- Rissmüller, Ludw.**, translocation of substances in the plant, 1874, 490.
- Rissmüller, Ludw.**, and **H. Wiesinger**, conversion of rags and hair into manure, 1879, A., 859.
- Ritter**, cotton seed cake as fodder, 1880, A., 500.
- Ritter, August**, the "temperature surface" of carbonic acid, 1879, A., 195.
- Ritter, Ch. E. Eugène**, black phosphorus, 1874, 238.
- arsenic in grape sugar, 1879, A., 1077.
- Ritter, Ch. E. Eugène**. See also **V. Feltz**.
- Ritthausen, Carl Heinrich Leopold**, estimation of nitrogen in albuminoids, 1874, 296.
- body resembling asparagin in vetch seeds, 1874, 701.
- vicin and convicin, 1876, i., 936; 1881, A., 1158.
- new method of analysis for milk, and a new carbohydrate in milk, 1877, ii., 519.
- albuminoids of seeds, 1878, A., 81.
- the action of phosphoric acid on calcium carbonate, 1878, A., 198.
- amount of fat in commercial gluten, 1878, A., 239.
- presence of stearic acid in the grain of rye, 1878, A., 239.
- analyses of fodder, 1878, A., 240.
- Ritthausen, Carl Heinrich Leopold**, protein from *Bertholletia* (Para) nuts, 1878, A., 518.
- albuminoids from castor oil seeds, 1879, A., 390.
- crystalline albuminoids from different oil seeds, 1880, A., 676; 1881, A., 833.
- action of salt solutions on conglutin and legumin, 1881, A., 1160.
- on the albuminoids in oil seeds, 1882, A., 234.
- distribution of myronic acid in the seed of *Brassica Napus* and *B. Rapa*, 1882, A., 243.
- composition of crystallised albumin from hemp and castor oil seeds, 1882, A., 876.
- crystallised albumin from pumpkin seeds, 1882, A., 877.
- behaviour of lead chromate in organic combustions, 1882, A., 898.
- Ritthausen, Carl Heinrich Leopold**, and **Robert Pott**, influence of an abundant nitrogenous and phosphatic manuring on the composition of spring wheat, 1874, 183.
- compounds of proteids with copper oxide, 1874, 702.
- Ritthausen, Carl Heinrich Leopold**, and **Hans Settegast**, estimation of nitrogen in plant albuminoids, 1878, A., 533.
- Rizza, Benvenuto**, action of zinc methide on chloral, 1882, A., 491.
- Rjabinin, Constantin**, methyl and ethyl ethers of diallylcarbinol, 1880, A., 372; 1881, A., 404.
- Rjabinin, Constantin**, and **Alexander M. Saytzeff**, diallylisopropylcarbinol, 1879, A., 612.
- Robbins, Charles A.**, *Gelsemium sempervirens*, 1877, ii., 344.
- Robbins, Charles A.** See also **Franz Leopold Sonnenschein**.
- Robbs, Charles Edward**. See **Matthew Monierieff Pattison Muir**.
- Robert, G.** (and others), butter and cheese, 1882, A., 348.
- Robert, Julius**, preservation of beet leaves and the preparation of brown hay from maize, 1879, A., 960.
- Roberts, Charles Gay**, pig feeding, 1874, 707.
- Roberts W. B.**, action of lime on silica in mortar, 1880, A., 216.
- Roberts, (Sir) William**, estimation of the amylolytic and proteolytic activity of pancreatic extracts, 1881, A., 1051.
- Roberts-Austen, William Chandler**, preparation of standard trial plates to

- be used in verifying the composition of coinage, 1874, 197.
- Roberts-Austen**, *William Chandler*, liquation, fusibility, and density of certain alloys of silver and copper, 1875, 736.
- analogy between the conductivity for heat, and the induction balance effect of copper-tin alloys, 1880, A., 687.
- steel for the manufacture of dies, 1881, A., 856.
- Roberts-Austen**, *William Chandler*, and *Charles Romley Alder Wright*, condition of hydrogen occluded by palladium as indicated by the specific heat of the charged metal, 1873, 112.
- Roberts-Austen**, *William Chandler*. See also *Joseph Norman Lockyer*.
- Robinet**, *Ed.*, detection of salicylic acid in wines and in urine, 1878, A., 247.
- Robinet**, *Ed.*, and *Henri Pellet*, salicylic acid as an antiseptic, 1882, A., 1010.
- Robinson**, *Franklin Clement*. See *Charles Frederic Mabery*.
- Robinson**, *Henry*. See *William Dittmar*.
- Robinson**, *Henry Halliburton*. See *Francis Robert Japp*.
- Rochard**, *F.*, and *Ch. Legros*, vegetable parasites in bread, 1873, 86.
- Roche**, *F.* See *Pierre Antoine Favre*.
- Roche**, *Isidore Jules*. See *Fernand Guy Bazault*.
- Rocholl**, *H.*, separation of silicic anhydride in the analysis of limestones, iron ores, and other minerals, 1880, A., 745.
- Rocques**, *Xavier*, action of water on zinc and lead, 1880, A., 766.
- Roderburg**, *Fritz*, oxyxymene and thio-xymene, 1873, 1030.
- Rodewald**, *Hermann*, and *Johann Reinke*, composition of protoplasm, 1881, A., 753.
- Rodewald**, *Hermann*, and *Bernhard Tollens*, reduction of cupric oxide (Fehling's solution) by milk sugar, 1879, A., 217.
- formation of levulinic acid from milk sugar, 1881, A., 410.
- Rodewald**, *Hermann*. See also *Johann Reinke*.
- Rodiczky**, *Eugen von*, culture of the lentil vetch, 1880, A., 500.
- Rodwell**, *George Farrer*, effect of heat on silver iodide, 1875, 532.
- expansion coefficients of lead iodide and of silver lead iodide, 1881, A., 495, 966.
- effects of heat on the chloride, bromide, and iodide of silver, and on some chlorobromiodides of silver, 1881, A., 965.
- Rodwell**, *George Farrer*, coefficients of contraction and expansion of silver and cuprous iodides and their alloys, 1882, A., 570.
- Rodwell**, *George Farrer*, and *Harry Montagu Elder*, effect of heat on mercury diiodide, 1879, A., 498; 1880, A., 443.
- Röhmnn**, *Franz*, separation of nitrous and nitric acid from the living organism, 1882, A., 100.
- acid fermentation of the urine, 1882, A., 755.
- Röhmnn**, *Franz*. See also *Albert Fraenkel*.
- Röhr**, production of sugar from starch, 1880, A., 932.
- Röhre**, *Reiner*, action of reducing agents on brucine previously dissolved in nitric acid, 1878, A., 679.
- Röhre**, *Reiner*. See also *Adolph Claus*.
- Röhrig**, *Armin*, the function and decomposition of fat taken as food in the blood, 1876, i., 948.
- Röhrig**, *Ernst*, and *Robert Haas*, the iron ore of Bidassoa; its treatment by calcination and lixiviation, 1874, 97.
- Roemer**, *Hermann*, derivatives of *n*-propyl alcohol, 1873, 1118; 1874, 39.
- deoxyalizarin, 1881, A., 823.
- anthracylamine, 1882, A., 974.
- Roemer**, *Hermann*, and *M. Schwarzer*, tetranitroisocanthraflavic acid, 1882, A., 975.
- deoxyanthraflavic acid, 1882, A., 975.
- Roemer**, *Hermann*. See also *Edward Schunck*.
- Römer**, *Peter*, use of artificial alizarin in Turkey red dyeing, 1876, i., 459.
- Roepper**, *William Theodore*, on a pseudomorph after anorthite from Franklin, New Jersey, 1879, A., 1023.
- Rörsch**, and *R. Fassbender*, detection of alkaloids in the internal organs of the body, 1875, 192.
- Rösch**, *Ludwig*. See *Ernst Wein*.
- Röse**, *Bruno*, ethereal salts of carbonic acid, 1881, A., 251.
- Rösing**, *Bernhard*, the zundererz or tinder ore of Clausthal, 1881, A., 24.
- Roessler**, *Carl*, some new compounds of indium, 1873, 846.
- separation of glucinum, 1878, A., 606.
- estimation of manganese, 1879, A., 746.
- use of copper phosphide in the refining of copper, 1880, A., 197.

- Roessler, Carl**, volumetric estimation of manganese and cobalt, 1880, A., 347.
- Rössler, Heinrich**, gold assays, 1873, 295.
- Rössler, William**. See *Eduard von Gerichten*.
- Rogalski**, analyses of chlorophyll, 1880, A., 561.
- Rohl, and G. vom Hess**, prevention of rot in potatoes, 1881, A., 1066.
- Rohn, Wilhelm**, ethylic isobutylacetate, methylisoamylcarbinol, and isobutylacetic acid, 1878, A., 486.
- Rohn, Wilhelm**. See also *Paul Wagner*.
- Rohrbeck, Hermann**,  $\alpha$ -methyl- $\beta$ -oxybutyric acid and  $\alpha$ -methylcrotonic acid, 1878, A., 136.
- Rojen, A. E. van, and Krelage**, mineral constituents of hyacinths, 1880, A., 58, 922.
- Rolland, Georges**, occurrence of mercury in California, 1881, A., 689.
- Rollet, Ant.**, determination of sulphur in the ore, in the fuel, and in the products of the iron industry, 1879, A., 974.
- desulphurising pig iron, 1882, A., 345.
- Rollmann, W.**, the specific gravity of cork, 1873, 958.
- Roloff, Friedrich** (and others), researches on lupinus sickness in sheep, 1882, A., 637.
- Romanese, Riccardo**. See *Manfredo Bellati*.
- Romanis, Robert**, analyses of rice soils from Burmah, 1881, A., 838.
- hot spring at Natmoo near Maulmain, Burmah, 1881, A., 1019.
- mineral water from Amherst, Burmah, 1882, A., 706.
- potash from bamboo, 1882, A., 781.
- Romburgh, Pieter van**,  $\beta$ -chlorallyl chloride and some of its derivatives, 1882, A., 375.
- glyceroldiformin, 1882, A., 378.
- trichloropropane:  $\beta$ -chloropropylone chloride, 1882, A., 589.
- Romegialli, Abelardo**, Turkey red, 1875, 491.
- Romeny, J.**, methylenemethylamine, 1878, A., 718.
- Rommier, Alph.**, on the dinitro-derivatives of the higher homologues of benzene, 1873, 887.
- dissociation of potassium sulphocarbonate, 1875, 1181.
- Rommier, Alph.** See also *David*.
- Roorda Smit, J. A.**, action of ammonium sulphite on nitrobenzene, 1876, i., 391.
- action of sulphur chloride on aniline, 1876, i., 602.
- Roorda Smit, J. A.** See also *Eduard Mulder*.
- Roos, Paul François van Hamel**, crystallised glycerin, 1876, i., 651.
- Roos, Paul François van Hamel**. See also *Hans Hübner*.
- Roozeboom, Hendrik Willem Bakhuys**, ammonium tribromide, 1882, A., 139.
- tertiary butyl bromide, 1882, A., 154.
- Roscoe, (Sir) Henry Enfield**, on a new chloride of uranium ( $\text{UCl}_3$ ), 1874, 933.
- on two new vanadium minerals, 1877, i., 444.
- note on metallic niobium and a new niobium chloride, 1878, A., 272.
- specific gravity of the vapours of chlorides of lead and thallium, 1878, A., 937.
- a study of some of the earth-metals contained in samarskite, 1882, T., 277.
- atomic weight of carbon, 1882, A., 794.
- Roscoe, (Sir) Henry Enfield, and Arthur Schuster**, absorption spectra of potassium and sodium at low temperatures, 1874, 942.
- the spectrum of terbium, 1882, T., 283.
- Rose, Gustav**, on the behaviour of the diamond and graphite at high temperatures, 1873, 1195.
- Rose, Gustav**. See also *Alexander Sadebeck*.
- Roseleur**, silver plating, 1878, A., 538.
- Rosenberg, Johan Olof**, nitrosothioferates, 1880, A., 9.
- Rosenfeld, Max**, detection of free sulphur, 1877, i., 341.
- cuprous chloride, 1879, A., 693.
- lecture experiments, 1880, A., 846; 1882, A., 137, 690.
- two new basic copper chromates; non-existence of potassium copper chromate, 1880, A., 853.
- Rosenfeld, Max**. See also *Max Hönig*.
- Rosenhain, C. M.**, chemical manufacture of paper from wood, 1876, ii., 234.
- Rosenstiehl, Auguste**, nitrotoluene, 1873, 272.
- synthesis of purpurin and analogous colouring matters, 1875, 160.
- researches on the colouring matters of madder, 1875, 197, 387; 1877, ii., 625.
- aniline-black, 1876, i., 816; ii., 311.
- part played by acids in dyeing with madder colours and their artificial substitutes, 1876, i., 818.
- on the difficulty of purifying aniline, 1876, i., 934.
- the isomeric rosanilines, 1876, i., 935.
- anthraflavone and anthraxanthic acid, 1876, ii., 517, 636; 1879, A., 383.



- Rosenstiehl, Auguste**, nitroalizarin, 1876, ii., 519; 1878, A., 231.  
 — method of softening water used for dyeing with madder colours, 1876, ii., 677.  
 — simultaneous formation of two tri-oxyanthraquinones, and synthesis of a new isomeride of purpurin, 1877, i., 209.  
 — the constitution of  $\psi$ -purpurin, 1877, ii., 495.  
 — purpuroxanthinecarbonic acid and anthraflavone, 1878, A., 428.  
 — comparison of oxyanthraflavone with isopurpurin, 1878, A., 677.  
 — constitution of the rosanilines, 1879, A., 463.  
 — absorption spectrum of alizarin and of some colouring matters derived from it, 1879, A., 807.  
 — constitution of rosaniline salts, 1880, A., 553.  
 — von Baeyer's process for the synthesis of indigotin, 1881, A., 98.  
 — existence of three isomeric rosanilines, 1881, A., 263.
- Rosenstiehl, Auguste**, and **Maximilien Gerber**, homologous and isomeric rosanilines, 1882, A., 964.  
 — conditions of formation of rosanilines, 1882, A., 1284.
- Rosenthal, G.**, precipitation of manganese by hydrogen peroxide, 1877, ii., 923.
- Rosenthal, Isidor**, specific heat of animal tissues, 1880, A., 483.
- Rosenthal, Isidor**, and **Julius Moeller**, thermoelectric temperature determinations, 1878, A., 104.
- Rosenwasser, Nathan**, colchicum seed, 1878, A., 327.
- Roser, Ludwig**, synthesis of ketonic acids, 1881, A., 731.  
 — *p*-toluylcarboxylic acid, 1882, A., 194.
- Roser, Ludwig**. See also **Otto Fischer**, **Casimir Wurster**.
- Roser, Wilhelm**, terebic acid, 1882, A., 716.  
 — separation of water within the molecule, 1882, A., 1045.  
 — pyrocinchonic acid and its formation from oil of turpentine, 1882, A., 1114.
- Rosicki, Johann**, resorcinolisosuccinein, 1880, A., 385.
- Rosicki, Johann**. See also **Richard E. Meyer**.
- Roskell, Joseph**, on the loss of copper through volatilisation in the Cornish copper assay, 1876, i., 963.
- Ross, David William, Garrya Fremontii**, 1878, A., 327.
- Ross, William Alexander**, pyrology or fire-analysis, 1873, 537.  
 — new blowpipe test for phosphoric acid, 1880, A., 746.  
 — cause of the blue colour of the sapphire, the green of the emerald, and the purple of the amethyst, 1882, A., 1269.
- Roszbach, Michael Joseph**, the action of alkaloids on the organic substratum of the animal, 1874, 173.  
 — multiplication of bacteria in the blood of living animals by a chemical ferment free from organisms, 1882, A., 1309.
- Rosse (Earl of)**, the electric resistance of selenium, 1874, 861.
- Rossetti, Francesco**, on the temperature of flame, 1878, A., 262, 467, 694.  
 — thermal absorption and emission of flames, and the temperature of the electric arc, 1880, A., 206.
- Rossi, Antonio**. See **Adolf Lieben**.
- Roster, Giorgio**, a new kind of calculeus from oxen: magnesium lithurate, 1873, 398.  
 — mineralogical notices from Elba, 1878, A., 281.  
 — lithofellic acid and some lithofellates, 1880, A., 131.  
 — a new organic acid, lithobilic acid, 1880, A., 270.  
 — new method of determining the fusing points of organic substances, 1880, A., 419.
- Rostoski, E.**, amidated derivatives of hydroxylamine, cinnamhydroxamic, and dicinnamhydroxamic acids, 1876, i., 272.
- Roswag and Geary**, purification of raw lead and elimination of the silver, 1878, A., 819.
- Rotering, Ferdinand**, and **Ernst Carl Theodor Zincke**, conversion of ketonic acids into hydro-acids by sodium amalgam, 1876, i., 926.  
 — on  $\beta$ -benzhydrylbenzoic anhydride and  $\beta$ -benzylbenzoic acid, 1876, ii., 413.
- Rotermund, H.**, formation of diphenylurea from dibenzhydroxamic acid and conversion of benzoic acid into aniline, 1875, 768.
- Roth, Carl Franz**, hexamethyltrimethylenediamine bromide, 1882, A., 500.  
 — glycolines and glycoleines, 1882, A., 1194.
- Roth, G.**, action of chlorine on ethidene oxychloride, 1876, i., 364.

- Roth, Justus Ludwig Adolf**, studies on Monte Somma, 1882, A., 482.
- Roth, L.**, a new occurrence of gismondine, 1881, A., 26.
- Rother, Reinhold Friedrich Wilhelm**, lactophosphate, 1873, 494.
- starch and albumin, 1873, 919.
- iodoform, 1874, 564.
- magnesium sulphite, 1875, 423.
- bismuth and iron salts, 1876, ii., 773.
- active principle in Persian insect powder, 1878, A., 801.
- calcium phosphite, 1880, A., 5.
- coccus-red, 1881, A., 130.
- Rotondi, Ermenegildo**, ash of different parts of the vine, 1880, A., 133.
- researches on the bleeding of vines, 1880, A., 133.
- aëration of must, 1880, A., 931.
- Rotondi, Ermenegildo**, and **A. Galimberti**, composition of leaves of diseased vines, 1880, A., 416.
- — composition of must at different stages of ripeness of the grape, 1880, A., 425.
- — action of various manures on the composition of must, 1880, A., 507.
- Rotondi, Ermenegildo**. See also **Angelo Pavesi**.
- Rottier, J. D.**, and **Charles L. Waldack**, iron developers in photography, 1877, i., 756.
- Rouart**. See **Mignon**.
- Roucher, Ch.**, a new reaction of essence of mint, 1875, 371.
- Rousse, J.**, a pile with manganese, forming salts which can be utilised or regenerated, 1882, A., 134.
- secondary pile, 1882, A., 135.
- Rousseau, Gustave**, a diatomic alcohol derived from  $\beta$ -naphthol, 1882, A., 735.
- action of chloroform on  $\beta$ -naphthol, 1882, A., 1211.
- ethers of the glycol  $C_{22}H_{14}O_2$ , 1882, A., 1299.
- Roussel, Victor**, titanium and vanadium in the basalts of Clermont-Ferrand (in Auvergne), 1874, 137.
- Rousselot, A.**, estimation of potassium in potassium salts and in manures, 1882, A., 95.
- Rousset** (and others), *Phylloxera vastatrix* and means of destroying it, 1881, A., 842.
- Roussille, Albert**, on the assimilation of fossil phosphates and on the danger of the exclusive use of nitrogenous manures, 1876, i., 731.
- Roussille, Albert**, research on the ripening of olives, 1878, A., 596.
- proportions of nitrogen, ash, and phosphoric acid in successive cuttings of leguminous fodder plants, 1882, A., 649.
- Roussin, Zacharie**, the sweet principle of liquorice root, 1876, i., 62.
- Routledge, Robert**, composition of ammonium amalgam, 1873, 135.
- Rouville, Paul de**, natural crystals of magnesium sulphate (*epsomite*) of large size, 1879, A., 358.
- Roux, Eugène**, rapid method for the estimation of lead in tin, 1881, A., 849; 1882, A., 99.
- Roux, Louis**, and **Emile Sarrau**, on the effects of dynamite, 1873, 1063.
- — researches on explosive substances, 1874, 119; 1875, 126.
- Roux, Pierre Paul Emile**, influence of tea and coffee on the amount of urea excreted, 1873, 1152.
- a yeast incapable of producing an invertive fermentation, 1881, A., 632.
- Roux, Pierre Paul Emile**. See also **Charles Edouard Chamberland**.
- Rowland, Henry Augustus**, the mechanical equivalent of heat, 1881, A., 491.
- Rowland, William L.** See **Samuel Philip Sadtler**.
- Roza, L.**, refining of lead containing silver by means of steam, 1876, i., 129.
- Rozsnyay, M.**, salicylic acid as a disinfectant, 1876, i., 805.
- Rubner, Max**, composition of meat impregnated with common salt, 1878, A., 627.
- absorption of various alimentary materials in the human intestinal canal, 1880, A., 563.
- fluid meat, 1880, A., 904; 1881, A., 451.
- composition of curds, 1880, A., 934.
- decomposition of peas in the intestine of man, 1881, A., 187.
- absorption of food passing through the human body, 1881, A., 1050.
- consumption of tissue in starving Herbivora, 1882, A., 416, 749.
- Rudneff, Vladimir**, isomeric sulphocinnamic acids, 1873, 505; 1875, 76.
- trimethylcarbamine, 1879, A., 40, 141.
- action of iodine on thiocarbamides, 1879, A., 48.
- amines containing tertiary radicles, 1879, A., 713; 1880, A., 545.
- thiocarbimides with tertiary radicles, 1880, A., 548.

- Rudneff, Vladimir**, products from the manufacture of petroleum gas, 1881, A., 329.
- Rudolph, Christian**, action of iodine on phenylmercurammonium chloride, 1878, A., 422.
- benzylamine, 1879, A., 921.
- derivatives of *o*-nitraniline, 1879, A., 921.
- action of ferric chloride on *o*-diamidobenzene, 1880, A., 162.
- action of nascent hydrogen on *o*-nitrobenzaldehyde, 1880, A., 469.
- Rudolph, Christian**. See also **Otto Fischer**, **Heinrich Hermann Salkowski**.
- Rücker, Arthur William**, suggestion as to the constitution of chlorine offered by the dynamical theory of gases, 1880, A., 692.
- Rücker, August**, methylecrotonic acid, 1878, A., 292.
- Rüdiger, A.**, analyses of ice, 1881, A., 207.
- Rüdorff, Friedrich**, melting and solidifying points of fats, 1873, 237.
- on the solubility of saline mixtures, 1873, 1101, 1102.
- estimation of ammonia, 1874, 289.
- determination of the specific gravity of powdered substances, 1879, A., 669.
- estimation of aqueous vapour in the atmosphere, 1880, A., 420.
- Ruf, Eug.** See **Wilhelm Eugling**.
- Rügheimer, Leopold**, *n*-phenylpropyl alcohol and allylbenzene, 1874, 894.
- phenylsuccinic acid, 1881, A., 599.
- ethylatrolactic acid, 1881, A., 600.
- artificial piperine, 1882, A., 1217.
- diphenylfumaric and diphenylmaleic acids, 1882, A., 1293.
- Rügheimer, Leopold**. See also **Albert Ladenburg**, **Wilhelm Stadel**.
- Rühlmann, Richard**, on the differences of affinity of chlorine, bromine, and iodine as multiples of the same constant, 1878, A., 634.
- Rümpler, Alvin**, on superphosphates containing iron and aluminium, and their analysis, 1874, 189.
- Ruffle, John**, estimation of nitrogen, 1879, A., 961.
- on the estimation of nitrogen by combustion, including the nitro-compounds, 1881, T., 87.
- Ruge, Carl Arnold**. See **August Martin**.
- Ruhemann, Siegfried**, derivatives of *m*-diamidobenzene and *o-p*-diamidotoluene, 1882, A., 391.
- Rummel, L.** See (**Baron**) **Ferdinand von Mueller**.
- Rumney, Robert**, obituary notice of, 1873, 780.
- Rump, Chr.**, chloroform, 1875, 439.
- Rump, Chr.** See also **Paul Eberhardt Jannasch**.
- Rumpf, Johann**, the crystallised magnetics of the North Eastern Alps, 1874, 1070.
- simple albite crystals from the Schneeburg, near Passeir, 1875, 544.
- crystalline structure of apophyllite, 1881, A., 397.
- Ruoff, Georg**, results of an exhaustive chlorination of aromatic substances, 1877, i., 299.
- Ruoff, Georg**. See also **Victor Merz**.
- Ruschhaupt, Fr.**, making corks airtight and indestructible, 1873, 308.
- Rush, Warren B.**, copaibic acid, 1879, A., 1038.
- Russell, Israel Cook**, occurrence of a solid hydrocarbon in the eruptive rocks of New Jersey, U. S. A., 1879, A., 896.
- Russell, William James**, action of hydrogen on silver nitrate, 1874, 3.
- absorption spectra of cobalt salts, 1881, A., 486, 957; 1882, A., 131.
- Russell, William James**, and **William Lapraik**, decomposition of nitric oxide by potassium pyrogallate, 1877, ii., 35.
- — on absorption bands in the visible spectrum produced by certain colourless liquids, 1881, T., 168.
- — a spectroscopic study of chlorophyll, 1882, T., 334.
- Russell, William James**, and **Nevil Story Maskelyne**, an attempt to form double salts of silver nitrate and other nitrates, 1877, ii., 843.
- Russell, William James**, and **Samuel Hatch West**, on a simple method of estimating urea in urine, 1874, 749.
- — relation of the urea to the total nitrogen of the urine in diseases, 1881, A., 1055.
- — amount of nitrogen excreted in the urine of man at rest, 1881, A., 1056.
- Rutley, Frank**, some peculiarities in the microscopic structure of the feldspars, 1876, ii., 54.
- Ruyssen, François**, and **Eugène Varenne**, solubility of silver chloride in hydrochloric acid, 1881, A., 880; 1882, A., 695.
- — solubility of mercurous chloride in hydrochloric acid, 1881, A., 881.
- Ruyssen, François**. See also **Ludovic Portes**.

## S.

- Saalfeld, *E.*, Palembang benzoin, 1881, A., 101.
- Saarnbach, *Ludwig*, phenoxypionic acid, 1879, A., 642.
- action of phenols on halogen derivatives of fatty acids, 1880, A., 392.
- Saare, *Oscar*. See *Curt Heinrich Weigelt*.
- Sabanéeff, *Alexander P.*, derivatives of acetylene, 1876, i., 55.
- reduction of organic haloid compounds by zinc and zinc-dust, 1877, ii., 728.
- boiling points of ethylene and ethane derivatives, 1881, A., 399.
- Sabanin, *A.*, and *N. Liaskowski*, influence of light on the formation of decomposition products of albuminous substances in the germination of the pumpkin, 1876, i., 415.
- respiration in the ripening fruits of poppy and rape, 1878, A., 333.
- a reaction of citric acid, 1878, A., 342.
- Sabatier, *Paul*, thermochemical researches on the sulphides, 1879, A., 865; 1880, A., 523, 689; 1881, A., 492.
- thermochemical study of dissolved alkaline sulphides, 1879, A., 866.
- thermochemical study of ammonium polysulphides and hydrogen persulphide, 1880, A., 690.
- iron chlorides, 1881, A., 961.
- Sabine, *Robert*, motions produced by dilute acids on some amalgam surfaces, 1879, A., 431.
- Sacc, *Frédéric*, analysis of *Agaricus factens*, 1873, 650.
- urine of marmots, 1874, 595.
- the properties of hops as a ferment in bread-making in the United States, 1876, i., 811; 1877, i., 240.
- Cucurbitaceae of Uruguay, 1882, A., 884.
- Uruguayan plants, 1882, A., 989.
- Sachs, *Ferdinand Gustav Julius von*, sap-quotient of beet, 1880, A., 931.
- Sachs, *Theodor*, curarine, 1878, A., 517.
- Sachse, *U.*, dinitrobenzenesulphonic acid, 1877, ii., 751.
- Sachsse, *Robert*, estimation of asparagin, 1873, 652.
- on a law on the diffusion of salts, 1874, 1054.
- relation between asparagin and protein, 1877, ii., 199.
- Sachsse, *Robert*, protein crystalloids from *Bertholletia excelsa*, 1877, ii., 200.
- contributions to the knowledge of chlorophyll, 1877, ii., 208; 1878, A., 516; 1882, A., 67, 412.
- estimation of sugar, 1877, ii., 226.
- xanthophyll, 1877, ii., 350.
- butter analysis (Hehner's method), 1878, A., 611.
- Sachsse, *Robert*, and *Walter Kormann*, formation of asparagin in germinating peas and estimation of nitrogenous bodies in the same, 1874, 1001.
- a method for the estimation of certain amides by means of nitrous acid, 1875, 784.
- Sachtleben, *Rudolf*, triisobutylamine, 1878, A., 849.
- Sachtleben, *Rudolf*. See also *Wilhelm Fleischmann, Ernst Albert Schmidt*.
- Sadebeck, *Alexander*, on fallore and its regular twin formations, 1873, 857.
- crystal tectonic of silver, 1880, A., 613.
- two regular intergrowths of different minerals, 1880, A., 855.
- the crystal system of manganite, 1881, A., 364.
- Sadebeck, *Alexander*, and *Gustav Rose*, the crystallisation of the diamond, 1877, ii., 717.
- Sadlon, *Karl*, tanning, 1881, A., 481, 1186.
- Sadtler, *Samuel Philip*, analytical notices, 1874, 1098.
- new formation of tartaric acid, 1876, i., 566.
- Sadtler, *Samuel Philip*, and *Henry Gratton McCarter*, a product of the destructive distillation of petroleum, 1881, A., 1128.
- Sadtler, *Samuel Philip*, and *William L. Rowland*, colouring matter from Beth-a-barra wood, 1881, A., 1042.
- Saget, *G.*, fixation of alumina as a discharge on indigo-blue by means of aluminium chloride, 1882, A., 676.
- Sagumenny. See *Zagumenny*.
- Sainte-Claire Deville, *Charles Joseph*, microcline-felspar and andesite, 1876, ii., 611.
- Sainte-Claire Deville, *Etienne Henri*, alloys of platinum and lead, 1875, 534.
- decomposition of water by platinum, 1876, ii., 43.
- Gay Lussac's law of volumes, 1878, A., 264.
- density of the vapour of ammonium dihydrosulphide, 1879, A., 880.



- Sainte-Claire Deville, Etienne Henri**, the temperatures of decomposition of vapours, 1880, A., 209.  
 — motion produced by the diffusion of gases and liquids, 1880, A., 293.  
 — obituary notice of, 1882, T., 235.
- Sainte-Claire Deville, Etienne Henri**, and **Jules Henri Debray**, reaction of rhodium, iridium, and ruthenium with ethyl alcohol and formic acid, 1874, 1076.  
 — — ruthenium and its compounds with oxygen, 1876, i., 48.  
 — — density of pure platinum and iridium and of their alloys, 1876, i., 523.  
 — — on osmium, 1876, ii., 279.  
 — — physical and chemical properties of ruthenium, 1877, i., 443.  
 — — a new compound of palladium, 1878, A., 650.  
 — — artificial laurite and platinumiferous iron, 1880, A., 222.
- Sainte-Claire Deville, Etienne Henri**, and **Louis Joseph Troost**, determination of high temperatures, 1880, A., 521, 526.  
 — — vapour densities of selenium and tellurium, 1880, A., 847.
- Sainte-Claire Deville, Etienne Henri**. See also **O. J. Broch**.
- Saint-Martin, Louis Gigaud de**, researches on santonin, 1873, 162.  
 — estimation of the residues of wine, 1881, A., 1086.
- Saint-Martin, Louis Gigaud de**. See also **Marcellin Berthelot**.
- Saintpierre, Camille**, and **Guillaume Jeannel**, production of sulphocyanic acid from carbon sulphide, 1875, 1183.
- Saintpierre, Camille**, and **Lucien Magnien**, gases in the fruit of the bladder senna (*Colutca arborescens*), 1877, i., 105.  
 — — experiments on the ripening of grapes, 1878, A., 445.
- Saintpierre, Camille**. See also **Alfred Estor**.
- Saint-Venant, Adhemur Jean Claude Barré de**, atomic constitution of bodies, 1876, ii., 472.
- Sakurai, Tōji**, metallic compounds containing bivalent hydrocarbon radicles, 1880, T., 658; 1881, T., 485; 1882, T., 360.
- Salathé, Fritz**. See **Georg Lunge, Wilhelm Michler**.
- Sale**, the action of light on the electrical resistance of selenium, 1873, 998.
- Salessky, D.**, action of hydrochloric acid on isobutylene, 1873, 43, 368.
- Salet, Georges**, formation of iodic acid in flames containing iodine, 1875, 608.  
 — on the spectra of nitrogen and alkali metals in Geissler's tubes, 1876, i., 863.  
 — vapour density of ammonium sulphide, 1878, A., 645.
- Salis, Emmanuel von**. See **Emilio Nötling**.
- Salisbury (Marquis of)**, spectral lines of low temperature, 1873, 711.
- Salkowski, Ernst Leopold**, Lex's test for phenol with ammonia and bleaching powder, 1873, 534.  
 — taurocarbanic acid, 1873, 1129.  
 — synthesis of taurocarbanic acid, 1874, 148.  
 — action of potassium cyanate on sarcosine, 1874, 464.  
 — testing cholesterolin, 1874, 715.  
 — formation of urea in the animal organism, 1875, 775.  
 — behaviour of substances containing sulphur in the animal organism: connection between chemical constitution and physiological action, 1876, i., 949.  
 — on the source of indican in the urine of Carnivora, 1876, i., 950.  
 — formation of allantoin from uric acid in the animal body, 1876, ii., 291.  
 — phenol forming substance in human urine, 1877, i., 330.  
 — formation of phenol in the animal body, 1877, ii., 504.  
 — behaviour of uric acid absorbed by the intestinal canal of the dog, 1878, A., 525.  
 — occurrence of allantoin and hippuric acid in dogs' urine, 1878, A., 594.  
 — compounds of grape sugar with cupric hydrate, 1879, A., 778.  
 — pancreatic digestion, 1879, A., 814.  
 — behaviour of ammonium chloride in the organism and estimation of chlorine in urine, 1879, A., 830.  
 — quantitative estimation of chlorides in urine, 1881, A., 643.  
 — aldehyde reaction with ammoniacal silver nitrate solution, 1882, A., 1329.
- Salkowski, Ernst Leopold**, and **Heinrich Hermann Salkowski**, formation of hydrocinnamic acid by means of the pancreas ferment, 1879, A., 465.  
 — — products of the fermentation of albuminoids, 1879, A., 659; 1880, A., 413.  
 — — physiological relations of phenylacetic and phenylpropionic acids, 1879, A., 662.

- Salkowski, Ernst Leopold**, and **Heinrich Hermann Salkowski**, scatole forming substance, 1881, A., 175.
- Salkowski, Ernst Leopold** (and others), Beeker's method of creaming, 1882, A., 674.
- Salkowski, Ernst Leopold**. See also **Sigismund Siegfried Radziejewski**.
- Salkowski, Heinrich Hermann**, on the decomposition of the nitransols by ammonia and constitution of triamidobenzene, 1873, 280.
- direct formation of aromatic amido-derivatives, 1873, 638.
- note on Petersen's paper on the constitution of benzene derivatives, 1873, 1131.
- nitrophenol and dinitrobenzene, 1874, 467.
- on the constitution of dinitrobenzene, 1874, 795.
- nitrophenol and dioxybenzene, 1875, 64.
- ammonia derivatives of benzene, 1875, 70, 366.
- usnic acid, 1876, i., 599.
- a double salt of benzoic and *p*-nitrobenzoic acids, 1876, i., 710.
- double salts of the organic acids, 1878, A., 72.
- derivatives of triamidobenzene, 1878, A., 140.
- behaviour of *m*-nitransol towards ammonia, 1879, A., 528.
- arsenates of zinc and cadmium, 1880, A., 216.
- *p*-hydroxyphenylacetic acid, 1880, A., 252.
- Salkowski, Heinrich Hermann**, and **G. Rehs**, on some derivatives of  $\beta$ -dinitrophenol, 1874, 801.
- Salkowski, Heinrich Hermann**, and **Christian Rudolph**, constitution of dinitroanisic acid and its derivatives, 1878, A., 72.
- Salkowski, Heinrich Hermann**. See also **Ernst Leopold Salkowski**.
- Salleron, J.**, determination of alcohol in aqueous liquids and wines, and in presence of sugar, 1874, 817.
- estimation of alcohol by the temperature of ebullition, 1877, i., 346.
- changes in glass by heating, 1881, A., 5.
- Salomon, Georg Anton**, occurrence of grape sugar in alcohol, 1877, i., 705.
- formation of xanthine derivatives by the action of pancreas ferment on albumin, 1878, A., 588.
- Salomon, Georg Anton**, occurrence and origin of hypoxanthine and lactic acid in the animal body, 1879, A., 176.
- hypoxanthine from albuminoid bodies, 1880, A., 897.
- formation of xanthine bodies in germinating plants, 1882, A., 987.
- Salomon, Georg Anton**. See also **Hugo Krause**.
- Salomon, Ludwig Rudolph Friedrich**, carbon oxysulphide, 1873, 350.
- on the sulphocarbonic ethers, 1873, 617.
- sulphuretted chlorocarbonic ethers, 1873, 1222.
- the mixed ethers of xanthic acid, 1874, 362.
- isocyanocarbonic ether (a warning), 1874, 791.
- on the connection of allophanic, oxaluric, and alloxanic acids, 1874, 791.
- intermediate formation of anhydrides in chemical actions, 1876, i., 559.
- ethyl oxalurate, 1876, ii., 74.
- determination of the acid in sugar of lead and in lead vinegar, 1880, A., 189.
- quantitative estimation of phenol, 1882, A., 339.
- analysis of starch, 1882, A., 339.
- elementary composition of starch, 1882, A., 1183.
- Salomon, Ludwig Rudolph Friedrich**. See also **R. Conrad**, **Alfred Kretzschmar**, **B. Peitzsch**.
- Salomon, W.**, method of preserving brewers' grains, 1881, A., 951.
- Salter, Thomas W.**, some thallium pigments, 1878, A., 454.
- Salvétat**. See **Jean Augustin Barral**.
- Salzer, Leopold**, purification of beet spirit, 1882, A., 1335.
- Salzer, Theodor**, hypophosphoric acid and its salts, 1877, ii., 702; 1879, A., 105; 1882, A., 461.
- Nessler's test for ammonia, 1881, A., 940.
- Salzmann, Maximilian**, phospham, 1874, 870.
- Salzmann, Maximilian**, and **Karl Hermann Wichelhaus**, trinaphthylene-diamine, 1876, ii., 528.
- — — — — euxanthone, 1878, A., 79.
- — — — — preparation of benzene from brown-coal tar oil, 1878, A., 860.
- Salzmann, Maximilian**. See also **Friedrich Ludwig Alphons Oppenheim**, **Eugen Sell**.

- Samek, Jos.**, cacao rind as fodder for calves, 1880, A., 502.  
 — cultivation of various agricultural plants, 1881, A., 1069.  
 — feeding milch cows with grass and lucerne, 1882, A., 238.
- Samek, Jos.**, and **Carl Portele**, experiments with various sorts of beet, 1880, A., 59.
- Sampaio, Antonio José de.** See **Wilhelm Michler**.
- Sandberger, Karl Ludwig Fridolin von**, buchonite, a rock belonging to the nepheline group, 1873, 608; 1874, 135.  
 — remarks on the minerals enclosed in volcanic rocks, 1873, 739.  
 — smaltine and spathioopyrite from Bieber in Hesse, 1874, 552.  
 — dolerite, 1874, 557.  
 — clarite, 1875, 740.  
 — on baryta-mica from the Habachtal in Salzburg, 1876, i., 53.  
 — occurrence of platinum in nodules of brown iron ore from Mexico, 1876, i., 54.  
 — on some remarkable mercury ores from Mexico, 1876, i., 531.  
 — heubachite, a natural hydrated oxide of nickel and cobalt, 1877, ii., 855.  
 — occurrence of tin in silicates, 1879, A., 608.
- Sanderson.** See **Burdon Sanderson**.
- Sanquirico, Carlo.** See **Giulio Bizzozero**.
- Sanson, André**, determination of the mechanical coefficient of aliments, 1873, 1249.
- Sanzoni, M.**, and **G. Cappellini**, precipitated sulphur, 1877, i., 272.
- Santesson, Birger**, some combinations of niobium, 1876, i., 45; ii., 383.
- Santos, Julio Romano**, native antimony ochre from Arkansas, 1877, ii., 853.  
 — an unusual form of stibnite, 1877, ii., 854.  
 — aluminous chrysocolla from Utah, 1877, ii., 854.  
 — on silver arsenite insoluble in aqueous ammonia, 1878, A., 936.  
 — examination of the products of weathering of allanite, 1878, A., 947.  
 — analysis of a remarkable iron slag, 1878, A., 1019.  
 — analysis of lamp-black made from the natural hydrocarbon gas of the Ohio petroleum region, 1879, A., 97.  
 — volcanic ash from Cotopaxi, 1880, A., 97.
- Santos e Silva, Joaquim dos**, bromo-camphocarbonic acid, 1874, 70.
- Sapper, Eugen**, action of haloid acids on ethereal salts, 1882, A., 493.
- Sarandinaki, Nicolai**, citric acid and its derivatives, 1873, 496.
- Sarasin, Edmond.** See **Charles Friedel**.
- Saraau, Alfred**, action of phosgene on diazoamido-derivatives, 1882, A., 507, 608.
- Saraau, Alfred.** See also **Wilhelm Michler**.
- Saraau, Eduard**, action of acetic anhydride and sodium acetate on quinone, 1879, A., 718.  
 — bromine derivatives of quinone, 1880, A., 385; 1881, A., 1135.  
 — dibromoquinol, 1882, A., 400.
- Sarlay, Philipp.** See **Carl Senhofer**.
- Sarrau, Emile**, effects of powder in firearms, 1876, ii., 168.  
 — compressibility of gases, 1882, A., 686.
- Sarrau, Emile**, and **Paul Vieille**, decomposition of explosives in closed vessels: composition of the gases formed, 1879, A., 991; 1880, A., 780; 1881, A., 483.  
 — heat of formation of gun-cotton, 1881, A., 342.  
 — heat of formation of explosives, 1881, A., 968.  
 — decomposition of potassium picrate, 1881, A., 1033.
- Sarrau, Emile.** See also **Louis Roux**.
- Sarrazin, T.**, injurious effects produced by covering roads with pyrites residues, 1877, ii., 236.
- Sauer, Albert**, a generally applicable method of determining sulphur, 1873, 939; 1874, 288.  
 — a new application of Kempf's washing bottle, 1874, 287.  
 — behaviour of silver chloride to concentrated sulphuric acid and solution of ferric chloride, 1874, 335.
- Sauer, Albert**, and **Emil Ador**, estimation of nitrogen in the nitroglycerin of dynamite, 1878, A., 165, 611.
- Sauer, Ewald.** See **Wilhelm Staedel**.
- Saur, Richard**, ethylic ethylmethyl-acetoacetate, ethylmethylacetic acid, and  $\alpha$ -ethylmethyl- $\beta$ -oxybutyric acid, 1878, A., 27.
- Sauvage**, lilac dye for cotton, 1874, 1027.
- Savigny and Collineau**, two new vegetable dye-stuffs, 1882, A., 309.
- Saytzeff, Alexander M.**, succinic aldehyde, 1874, 570.

- Saytzeff, Alexander M.**, the laws which regulate the removal of hydriodic acid from organic compounds and its addition to them, 1876, i., 541.
- on isomeric caproic acids, 1878, A., 566.
- action of dilute sulphuric acid on allyldimethylcarbinol, 1879, A., 447.
- reduction of succinic chloride, and on *n*- $\gamma$ -hydroxybutyric acid, 1880, A., 712; 1882, A., 497.
- calcium and barium salts of diethyl- and methyl-propylacetic acids, 1881, A., 408.
- Saytzeff, Alexander M.**, and **Michael M. Saytzeff**, synthesis of allyldimethylcarbinol, 1876, i., 694; 1877, ii., 298.
- Saytzeff, Alexander M.**, and **Paul Saytzeff**, preparation of dipropylallylcarbinol, 1879, A., 136.
- Saytzeff, Alexander M.**, **Paul Saytzeff**, and **Woldemar Nikolsky**, action of sulphuric acid on allyldimethyl- and allyldipropylcarbinols, 1879, A., 214.
- Saytzeff, Alexander M.** See also **Nicolas H. Grabowski**, **Innocentius I. Kanonnikoff**, **Constantin Rjabinin**, **Alexius Schirokoff**, **Alexander Semljanitzin**, **Basilius I. Sorokin**, **Georg Wagner**.
- Saytzeff, Michael M.**, synthesis of diallyloxalic acid, 1876, i., 697; 1877, ii., 738, 882.
- action of allyl iodide and zinc on ethyl oxalate, 1877, i., 455.
- Saytzeff, Michael M.**, synthesis of diallylcarbinol, 1877, ii., 297.
- Saytzeff, Michael M.** See also **Innocentius I. Kanonnikoff**, **Alexander M. Saytzeff**.
- Saytzeff, Paul.** See **Alexander M. Saytzeff**.
- Scacchi, Arcangelo**, yellow incrustation from the Vesuvian lava of 1631, 1880, A., 445; 1882, A., 470.
- new sublimates from the crater of Vesuvius, 1882, A., 370.
- Schaal, Bernh.** See **Ernst Albert Schmidt**.
- Schaal, Eugen**, alizarin as an indicator in volumetric analysis, 1874, 191.
- Schaare, H.** See **Adolph Claus**.
- Schacherl, Gustav**, action of hydrochloric acid on potassium chlorate, 1877, i., 47.
- boiling point of chlorine tetroxide, 1881, A., 345.
- preparation of monobromo- and dibromo-succinic acids, 1881, A., 577.
- Schacherl, Gustav.** See also **Leopold von Pebal**.
- Schacht, Carl Julius Adolf**, estimation of the alkaloids in quinine wine, 1881, A., 204.
- action of different kinds of benzoic acid and their sodium salts on potassium permanganate, 1882, A., 339.
- Schack, Adolph**, discrimination of pressed and distilled oil of lemons, 1873, 1059.
- reaction of oil of peppermint, 1882, A., 667.
- Schad, Ludwig**, preparation of *m*-toluidine (b.p. 197°) from commercial aniline, 1874, 377.
- Schäfer, M.**, bromanidotoluenesulphonic acids, 1875, 369, 462.
- Schäfer, P.**, dibenzamide, 1874, 165.
- Schäfer, P.** See also **Bernhard Rathke**.
- Schaeffer, Gustav**, Schlumberger's electroplated cast-iron cylinders for calico printing, 1875, 196.
- Schaeppi, Henry.** See **Georg Lunge**.
- Schär, Eduard**, remarks on Fudakowski's paper on active oxygen, 1873, 839.
- on the behaviour of the chlorides, bromides, and iodides, and of ammonia in relation to the guaiac-copper test for prussic acid, 1874, 922.
- influence of alkalis on certain properties of hæmoglobin, 1875, 175.
- influence of salicylic acid and other antiseptics on ferments, 1876, i., 99.
- decoloration of indigo solution and other vegetable dyes by various sulphur compounds, 1876, ii., 103.
- fluorescence of quinidine sulphate, 1877, i., 93.
- decomposition of the haloid salts of mercury, 1879, A., 694.
- behaviour of officinal benzoic acid towards potassium permanganate, 1882, A., 1138.
- oil of cinnamon leaves, 1882, A., 1300.
- Schär, Eduard**, and **Georg Wyss**, camphor of cubebs, 1876, i., 942.
- Schär, Eduard.** See also **A. Cloëtta**.
- Schaffer, Friedrich**, mycoprotein, 1881, A., 449.
- Schaffer, Friedrich.** See also **Marcellus Nencki**.
- Schaffert, Friedrich**, manuring experiments on Donau Moos, 1879, A., 1050; 1881, A., 935.
- Schalfeeff, Michael I.**, pelargonamide, 1874, 255.
- cerotic acid from beeswax, 1877, i., 454.
- melissic acid, 1879, A., 782.



- Schall, Joh. Friederich Carl**, the hydroxytoluic acids from the three isomeric cresols and their oxidation to hydroxyphthalic acids, 1879, A., 791.
- Schardinger, Franz**, nitro-derivatives of anthrallavone, 1876, i., 584.
- Scharff, Friedrich**, step-like and skeleton growth of some regular crystals, 1880, A., 529.
- Scharizer, Rudolf**, notices on some Austrian minerals, 1881, A., 544.
- mineralogical observations, 1882, A., 580.
- Schaumann, Heinrich**. See **Hans Hübner**.
- Schaumann, Wilhelm**, *p*-xylydine, 1879, A., 51.
- Schaumann, Wilhelm**. See also **Adolf Pinner**.
- Schdanoff, E.**, action of monobromacetyl bromide on zinc methyl, 1873, 48.
- Scheerer, Carl Johann August Theodor**, preparation of bar iron from pig iron containing phosphorus, 1873, 98.
- the genesis of granulites, with special reference to the granulite formation of Saxony, 1874, 452.
- Scheerer, Carl Johann August Theodor**, and **Edmund Drechsel**, artificial formation of fluorspar and heavy spar, 1874, 234.
- Scheffer, G.**, ultramarines, 1874, 337.
- Scheffer, Joh. Daniel Reinier**, experiments on the diffusion of some organic and inorganic compounds, 1882, A., 1159.
- Scheibe, Anton**. See **Casimir Wurster**.
- Scheibe, Edmund**, borocitrates, 1881, A., 88.
- Scheibler, Carl Bernhard Wilhelm**, quercitesulphuric acid and a sugar derived therefrom different from quercite, 1873, 166.
- action of an alkaline copper solution on cane sugar and on mixtures of cane and grape sugars, 1873, 193.
- phosphotungstic acid as a precipitant for organic bases, 1873, 246; 1874, 192.
- use of the compound of *d*-glucose and sodium chloride for the titration of Fehling's solution, 1873, 265.
- estimation of the yield of pure sugar from various sorts of raw beet sugar, 1873, 296.
- on the presence of arabic acid in the sugar beet, and on arabin sugar, 1873, 1124.
- estimation of the theoretical yield of raw sugar, 1874, 1015.
- Scheibler, Carl Bernhard Wilhelm**, preparation and use of phosphoric acid for freeing sugar from lime, 1874, 1189.
- occurrence of vanillin in certain kinds of raw beetroot sugar, 1880, A., 467.
- remarks on Jünnemann's paper on "the separation of sugar from molasses," 1881, A., 128.
- saccharin and saccharinic acid, 1881, A., 149.
- relation between crystalline form and rotatory power of certain carbohydrates, 1881, A., 245.
- the strontia process for the separation of sugar from molasses, 1882, A., 673.
- preparation of strontium saccharate from molasses and syrup, 1882, A., 1015.
- Scheibler, Carl Bernhard Wilhelm** (and others), Scheibler's new process for the determination of sugar in beet, 1880, A., 587.
- Scheiding, Fritz**,  $\beta$ -naphthylamine, 1876, i., 713.
- Scheiding, Fritz**. See also **Carl Theodor Liebermann**.
- Scheitz, E.**, examination of red wine, 1875, 385.
- formation of ammonium sulphite, 1875, 421.
- Schelnberger, Karl**. See **Victor Merz**.
- Schenck, Felix**, influence of muscular activity on the decomposition of albumin, 1874, 994.
- Schenk, Ottokar**, variability of the spectra of luminous gases, 1874, 1122; 1875, 119.
- Schenk, Robert**, on triferrous phosphide, 1873, 826.
- on tetranickelous phosphide, 1874, 214.
- obituary notice of, 1876, i., 621.
- Schenk-Bauhof**, proper thickness and depth to sow corn, 1880, A., 181.
- Scherbatscheff, Alexander**, relations between the solubility of salts, and the amount of their water of crystallisation, 1874, 333.
- Scherer, S.** See **Ludwig Medicus**.
- Schering, E.**, testing of potassium iodide for iodate, 1873, 191.
- manufacture of potassium iodide, 1879, A., 504.
- lead in potassium iodide, 1879, A., 504.
- Scherks, Emil**, action of metals on ethyl  $\alpha$ -bromopropionate, 1882, A., 38.
- Schertel, Arnulf**, grey modification of tin, 1879, A., 888.

- Scheurer, Albert**, use of chromium chloride in calico printing, 1878, A., 824.
- Scheurer-Kestner, Auguste**, causes of the loss of sodium in the manufacture of soda by Leblanc's process, 1873, 196.
- presence of sulphuric anhydride in the gases resulting from the combustion of pyrites, 1875, 1237.
- action of sulphuric acid on platinum, 1876, i., 345; ii., 674; 1878, A., 650; 1880, A., 706.
- composition of the gases obtained by burning pyrites, 1876, ii., 120.
- remarks on the analysis of crude tartars, 1878, A., 687, 810.
- digestive ferment produced during panification, 1880, A., 776.
- new methods for the desulphurisation of alkaline solutions, 1881, A., 766.
- Scheurer-Kestner, Auguste**, and **Charles Meunier-Dollfus**, on carboniferous deposits of the basin of the Donetz and of Toul (Russia), 1874, 238; 1875, 107.
- Schiaparelli, Cesare**, ethereal salts of phenyl and some of their derivatives, 1881, A., 602.
- Schiaparelli, Cesare**, and **Giulio Peroni**, some ingredients of normal urine, 1880, A., 907.
- Schicht, Ludwig**, electrolytic determination of metals, 1880, A., 747.
- Schiel, J.**, Nobili's rings on gold, 1877, i., 677.
- formation of ozone by hydrocarbons, 1879, A., 592.
- fermentation, 1879, A., 663.
- Schiff, Hugo**, sulphuretted tannic acid from phloroglucin, 1873, 506.
- the nature and constitution of tannic acid, 1874, 267; 1875, 763, 1197.
- chromium peroxide, 1874, 443.
- a condensation product of glyoxal, 1874, 570.
- on laurostearin and on the rectification of the analyses of early organic chemists, 1874, 1079; 1875, 750.
- derivatives of phloretin, 1875, 66.
- on the constitution of chlorine hydrate, 1875, 733.
- action of aniline on dichlorhydrin, 1875, 1033.
- rufigallic acid, 1876, i., 260.
- synthesis of sulphotannic acids, 1876, i., 260.
- carbon disulphide as an antiseptic, 1877, i., 124.
- a reaction of urea with furfural, 1877, ii., 742.
- Schiff, Hugo**, decomposition of ethyl borate, 1877, ii., 874; 1878, A., 287.
- acetylenecarbamide or acetylenurea, 1877, ii., 885; 1878, A., 294.
- aldehyde derivatives of amines and carbamides, 1878, A., 668.
- digallic acid, 1878, A., 673; 1879, A., 466, 646; 1880, A., 551.
- preservation of potable water, 1879, A., 85, 1072.
- analysis of organic compounds containing halogens or nitrogen, 1879, A., 555.
- tungsten oxychlorides and chlorides, 1879, A., 888.
- constitution of ellagic acid, 1880, A., 43.
- estimation of acetyl by means of magnesium, 1880, A., 67.
- formation of complex glucosides, 1880, A., 126.
- colouring matters from furfuraldehyde, 1880, A., 391.
- determination of nitrogen, 1880, A., 679.
- acetyl derivatives of æsculin and æsculetin, 1881, A., 180.
- decomposition of glucosides by heat, 1881, A., 439.
- a modification of helicin, 1881, A., 439.
- researches on glucosides, 1881, A., 610.
- alkyl-substituted amido-acids, 1882, A., 303.
- aldehydosulphites of amido-acids and amines, 1882, A., 304.
- helicin, 1882, A., 412.
- acroleincarbamide, 1882, A., 1195.
- Schiff, Hugo**, and **Felice Masino**, the isomeric nitrosalicyclic acids, 1880, A., 121.
- Schiff, Robert**, action of allyl bromide on silver nitrite, 1875, 51.
- nitrothymol and its derivatives, 1876, i., 582.
- additive products of aldehyde, 1876, i., 894; ii., 285.
- action of alcoholic potash on the mustard oils (*thiocarbimides*), 1877, i., 68.
- a series of compounds derived from aldehyde-ammonia, 1877, i., 313.
- constitution of chloral-ammonia and aldehyde-ammonia, 1877, ii., 308.
- furfuranide and furfuraline, 1878, A., 45.
- constitution of pyrrol, 1878, A., 216.
- nitrosofurfurine and oxynitrosofurfurine, 1878, A., 657.

- Schiff, Robert**, some decompositions of strychnine, 1878, A., 679.  
 — synthesis of *m*-nitrocinnamic acid, 1879, A., 157, 321.  
 — action of aldehydes on chloral-ammonia, 1879, A., 452.  
 — piperidine, 1880, A., 127.  
 — bromo-, nitro-, and amido-camphors, 1880, A., 891.  
 — constitution of bromocamphor, 1880, A., 892.  
 — action of zinc chloride on bromo-camphor, 1880, A., 892.  
 — action of bromine and chlorine on nitrocamphor, 1881, A., 438.  
 — properties of the bromine atoms in mono- and di-bromocamphors, 1882, A., 526.  
 — camphor derivatives containing nitrogen, 1882, A., 527.  
 — note on the phenol obtained by the action of zinc chloride on bromo-camphor, 1882, A., 739.  
 — method for determining the specific gravity of a liquid at its boiling point, 1882, A., 893.  
 — relation of molecular volume to atomic combination, 1882, A., 1024.  
**Schiff, Robert**, and **Sebastiano Speciale**, action of potassium cyanide on ammoniacal derivatives of chloral, 1880, A., 102.  
**Schiff, Robert**, and **Gabriele Tassinari**, ammonia derivatives of chloral, 1878, A., 22.  
 — two monobromopyromucic acids, 1878, A., 721; 1879, A., 308.  
**Schiff, Robert**. See also **Michele Fileti**.  
**Schiffer, Julius**, occurrence and origin of methylamine and methylcarbamide in urine, 1881, A., 631.  
 — decomposition of sarcosin in the human body, 1882, A., 78.  
**Schifferdecker, O.**, Mitscherlich's test for phosphorus, 1873, 407.  
**Schifferdecker, O.** See also **Carl Arnold August Michaelis**.  
**Schiller, Ferdinand**, extraction of sugar from lime-sludge, 1882, A., 1015.  
**Schiller, Rudolf**, drainage water from moorland, 1881, A., 117.  
**Schiller, Rudolf**, and **Robert Otto**, preparation of benzene and *p*-toluene sulphhydrates, 1877, i., 306.  
 — formation of benzene and *p*-toluene disulphide, 1877, i., 306.  
 — new method of preparing benzenesulphinic and toluenesulphonic acids, 1877, i., 312.  
 — reactions of aromatic disulphides, 1877, i., 463.  
**Schiller, Rudolf**, and **Robert Otto**, action of sulphur trioxide on sulphhydrates, 1877, i., 463.  
 — ethylbenzenesulphonate, 1877, i., 463.  
 — phenyl thiobenzoate and *p*-tolyl thiobenzoate, 1877, i., 468.  
 — experiments for preparing the thio-ethers of benzenesulphonic and *p*-toluenesulphonic acids, 1877, i., 469.  
**Schimper, Andreas Franz Wilhelm**, glaukerite and blödite of Pendschab, 1878, A., 118.  
 — formation of starch grains, 1881, A., 1061.  
 — growth of starch grains, 1881, A., 1061.  
**Schimpf**. See **Hermann Adolph Köhler**.  
**Schindler**, cultivation without animal manures, 1882, A., 1314.  
**Schindler, Franz**, influence of temperature on the germination of bunt spores, 1881, A., 455.  
**Schinnerer, L.**, analysis of copper-glance from Catamarca, 1873, 851.  
**Schirmer-Neuhaus**, cultivation of furze, 1881, A., 116.  
**Schirokoff, Alexius**,  $\beta$ -dipropyl- and  $\beta$ -diethyl-ethylenelactic acids; oxidation of allyldimethylcarbinol and diallylcarbinol, 1880, A., 382.  
 — conversion of the hydroxyvaleric acid from allyldimethylcarbinol into isopropylacetic acid, 1881, A., 414.  
**Schirokoff, Alexius**, and **Alexander M. Saytzeff**, allyldiethylcarbinol, 1879, A., 214, 448.  
**Schischkoff**. See **Chichkoff**.  
**Schlagdenhauffen, Charles Frédéric**, action of sodium sulphide on glycerin, 1873, 868.  
 — action of potassium permanganate on sulphides, 1875, 186.  
 — analysis of a mixture of sulphides, sulphydric acid, and thiosulphate, 1875, 910.  
**Schlagdenhauffen, Charles Frédéric**, and **Frédéric Wurtz**, behaviour of the thiocyanates of potassium and ammonium in the presence of oxygen acids and of some metallic oxides, 1878, A., 36.  
**Schlagdenhauffen, Charles Frédéric**. See also **Edouard Heckel**, **Léon Oberlin**.  
**Schlagintweit-Sakünlünski, Hermann Alfred Rudolph von**, nephrite from the Künlin hills, 1874, 779.  
**Schleich, G.**, estimation of urea by sodium hyphobromite, 1875, 483.

- Schleiermacher**, *August*, condensation of a liquid at the wet surface of a solid, 1880, A., 363.
- Schlesinger**, *Robert*, testing of shoddy, 1873, 1168.
- micrographic and chemical researches on the textile fibres of certain Bromeliaceae, 1874, 87.
- Schlickum**, *Oskar*, new alkalimetric method for estimating phosphoric acid, 1880, A., 824.
- adulteration of balsam of Peru, 1882, A., 1339.
- Schlösing**, *Jean Jacques Théophile*, nitrates in soils, 1873, 1198.
- fixation of atmospheric ammonia by plants, 1874, 999; 1882, A., 242.
- estimation of clay in arable soils, 1874, 1010.
- constitution of clays, 1874, 1071, 1145.
- contributions to agricultural chemistry, 1875, 179.
- on the ammonia of the atmosphere, 1875, 419.
- the determination of ammonia in the air, 1875, 663.
- interchange of ammonia between land, air, and water, 1876, i., 95, 518; ii., 44, 172, 319.
- the assimilation of atmospheric nitrogen by soil, 1876, ii., 320.
- separation of potassium and sodium, 1877, ii., 921.
- constancy of the proportion of carbonic anhydride in the atmosphere, 1881, A., 19.
- magnesia industry, 1881, A., 1087, 1180.
- absorption of volatile bodies by the aid of heat, 1882, A., 902.
- Schlösing**, *Jean Jacques Théophile*, and *Achille Müntz*, nitrification by organised ferments, 1877, ii., 215; 1878, A., 163, 597; 1880, A., 277.
- Schlosser**, *A.*, and *Zdenko Hanns Skraup*, synthesis of the quinoline series, 1882, A., 71.
- Schlumberger**, *Ernest*, process for precipitating potash in the form of alum from colours intended for roller printing, 1873, 950.
- ferro- and ferri-cyanides of aniline for aniline-black, 1875, 1063.
- applications of salicylic acid, 1881, A., 860.
- Schmalzigaug**, *Hermann*. See *Carl Graebe*.
- Schmehl**, *Chr.* (and others), cultivation of potatoes and the feeding value of different sorts, 1882, A., 550.
- Schmelck**, *Ludwig*, results of the Norwegian North Sea expedition, 1881, A., 81.
- Schmid**, *Ernst Ehrhard Friedrich Wilhelm*, the kaolin of the Thuringian variegated sandstone, 1877, ii., 119.
- mineralogical notices, 1882, A., 582.
- Schmid**, *Wilhelm*, resoreyanin, 1882, A., 509.
- Schmidt**, *Adolf*, a decomposition of hornstone, 1879, A., 511.
- quartz-diorite from Yosemite, 1879, A., 512.
- Schmidt**, *Alb.* (Regensburg), adulteration and testing of beer, 1878, A., 755.
- Schmidt**, *Albert* (Wunsiedel), fichtelite and retinite in the peat moors of the Fichtelgebirge, 1876, i., 350.
- Schmidt**, *Carl Ernst Heinrich*, eatable earths of Lapland and Southern Persia, 1873, 151.
- the mineral butter from the banks of the Irtisch and Yenisei, 1874, 1072.
- examination of various soils and subsoils, 1881, A., 456.
- black-earth of Russia, 1881, A., 1070.
- Schmidt**, *E.B.*, action of halogen sulphur compounds on aniline, acetanilide, and benzene, 1878, A., 974.
- Schmidt**, *Ernst Albert*, a new hydrocarbon isomeric with anthracene, 1873, 176.
- nitroanthracene and its derivatives, 1873, 1233; 1874, 581.
- purification of phenanthrene, 1874, 581.
- anthracene and chrysene, 1874, 987.
- comparative method of estimating tanning materials, 1874, 1183.
- oxidation of isobutyl alcohol, 1875, 245.
- chrysene, 1875, 254.
- action of hydrogen sulphide on alkaloids, 1876, ii., 94.
- bromoform, 1877, ii., 293.
- action of carbon oxysulphide on aqueous ammonia, 1877, ii., 307.
- formation of allylsulphocarbimide, 1877, ii., 309.
- morphine hydriodide and hydrobromide, 1877, ii., 343.
- constituents of cubebs, 1877, ii., 344.
- testing bees-wax for resin, 1877, ii., 642; 1879, A., 283.
- polysulphhydrates of strychnine and brucine, 1877, ii., 905.



- Schmidt, Ernst Albert**, "mercurialine" (methylamine), 1879, A., 40.
- methylcrotonic and angelic acids, 1879, A., 617; 1881, A., 1126.
- daturine, 1880, A., 481.
- alkaloids from *Belladonna* and *Datura Stramonium*, 1881, A., 293.
- caffeine, 1881, A., 746.
- calcium double salt of methylcrotonic and isobutylformic acids, 1881, A., 1126.
- Schmidt, Ernst Albert**, and **Johannes Berendes**, the volatile acids of croton oil, 1877, ii., 593; 1879, A., 221.
- Schmidt, Ernst Albert**, and **E. Fieberg**, propyl phenyl ketone, 1874, 75.
- Schmidt, Ernst Albert**, and **Rudolf Köppen**, on veratrine, 1876, ii., 530; 1877, ii., 906.
- Schmidt, Ernst Albert**, and **Liebelt**, aloin from Barbados aloes, 1876, ii., 641.
- Schmidt, Ernst Albert**, and **Emil Löwenhardt**, constituents of the seeds of *Cocculus indicus*, 1881, A., 740.
- Schmidt, Ernst Albert**, and **Rudolf Sachtleben**, formation of tertiary amines by the synthesis of organic acids, 1878, A., 848.
- isobutylformic acid (inactive valeric acid), 1879, A., 139.
- Schmidt, Ernst Albert**, and **Bernh. Schaal**, naphthylaminesulphonic acids, 1875, 269.
- Schmidt, Friedrich**, presence of sulphuric acid in milk, 1880, A., 423.
- Schmidt, Friedrich** (and others), determination of the fat in milk by the lactobutyrometer, 1880, A., 352.
- Schmidt, Gustav**, relative space occupied by gases, 1880, A., 87.
- Schmidt, G. A.**, nitrophenanthrene and its derivatives, 1879, A., 941.
- Schmidt, Gustav August**, amidazobenzene, 1873, 64.
- compound of azobenzene with benzene, 1873, 499.
- Schmidt, Hermann**, and **Gustav Theodor August Otto Schultz**, diphenylbenzenes, 1879, A., 163; 1881, A., 435.
- diphenyl bases, 1879, A., 252, 652.
- azo-, azoxy-, and hydrazo-compounds, 1879, A., 630.
- diphenols, 1879, A., 651.
- benzidine ( $\alpha$ -diamidodiphenyl), 1881, A., 909.
- Schmidt, Hermann**. See also **Rudolph Fittig**, **Gustave Theodor August Otto Schultz**.
- Schmidt, Hermann Adolf Alexander**, new researches on the coagulation of fibrin, 1873, 180; 1876, i., 945; 1877, i., 483, 726.
- the relations of fibrin to colourless and red blood-corpuscles, and on the origin of these corpuscles, 1875, 175.
- further investigations of blood-serum, egg-albumin, and milk, by dialysis by means of sized paper, 1876, i., 87.
- on the relation of sodium chloride to certain animal fermentation processes, 1877, i., 101.
- Schmidt, J. Gustave**, action of aldehyde on furfuraldehyde, 1881, A., 247.
- action of furfuraldehyde on aldehydes and acetone in presence of soda, 1881, A., 573.
- action of acetone on furfuraldehyde and benzaldehyde in presence of alkalis, 1881, A., 889.
- reaction of organic compounds with rosaniline sulphite, 1882, A., 179.
- Schmidt, Max von**, action of bromine on phenoldisulphonic acid, 1878, A., 725.
- Schmidt, Max von**. See also **Ludwig (Ritter) Barth von Barthenau**, **Guido Goldschmiedt**, **Hugo Weidel**.
- Schmidt, Walther Bernhard**, action of sulphurous acid on certain minerals and rocks, 1882, A., 583.
- Schmidt-Mülheim, Adolf**, digestion of albuminoids, 1880, A., 484.
- ropy milk, 1882, A., 1122.
- Schmiedeberg, Oswald**, the active principles of fox-glove, 1875, 1266.
- a new carbohydrate, 1879, A., 779.
- formation of urea in the animal organism, 1879, A., 952.
- Schmiedeberg, Oswald**, and **Erich Harnack**, constitution and formation of muscarine, 1876, i., 937.
- synthesis of muscarine and allied ammonium bases, 1877, ii., 198.
- Schmitt, Rudolf Wilhelm**, action of aqueous chloride of lime on an aqueous solution of *o*-amidophenol hydrochloride, 1873, 280.
- preparation of azobenzene from aniline, 1879, A., 313.
- constitution of dichlorazophenol, 1879, A., 924.
- Schmitt, Rudolf Wilhelm**, and **Momme Andresen**, trichloroquinonechlorimide, 1882, A., 400.
- conversion of *p*-amidophenol into tri- and tetra-chloroquinones and trichloroquinonechlorimide, 1882, A., 611.

- Schmitt, Rudolf Wilhelm**, and **P. G. Bennewitz**, *o*-dichlorazophenol, 1874, 260.
- Schmitt, Rudolf Wilhelm**, and **Alwin Goldberg**, action of bleaching powder on ethyl alcohol, 1879, A., 910.
- Schmitt, Rudolf Wilhelm**, and **Otto Mittenzwey**, action of diazo-compounds on ethyl mercaptan, 1879, A., 304.
- Schmitt, Rudolf Wilhelm**, and **Richard Möhlau**, azoxy-, azo-, and hydrazophenotols, 1879, A., 317.
- Schmitz, A.**, physiological influence of adulterated wine, 1880, A., 174.
- Schmitz, Alexander**, diphenylene ketone and phenylbenzoic acid, 1879, A., 164.
- Schmitz, Alexander**. See also **Rudolph Fittig**.
- Schmitz, Hubert J.**, substitution products of mesitylenic acid, 1879, A., 155.
- Schmitz, M.**, specific rotatory power of cane sugar, 1877, ii., 876.
- Schmoeger, Max**, isomalic acid, 1876, ii., 507; 1879, A., 618; 1882, A., 40.
- on the possibility of replacing the carbonic acid of the air necessary for the production of chlorophyll in sarcophytic and parasitic plants by organic substances, 1879, A., 737.
- a hitherto unobserved property of milk sugar, 1881, A., 151.
- anhydrous milk sugar, 1882, A., 157.
- butter from sweet and sour cream, 1882, A., 348.
- Schmoeger, Max** (and others), estimation of fat in milk by the lactobutyrometer and Soxhlet's areometer, 1882, A., 109.
- on milk and butter, 1882, A., 899.
- Schmoeger, Max**. See also **Siegfried Friedlaender**.
- Schnapp, Heinrich**, diethyl- $\beta$ -oxybutyric acid, 1878, A., 293.
- Schnauss, Julius Carl**, new observations on several compounds of mercury, 1876, i., 342.
- silver bromide gelatin emulsion, 1880, A., 929.
- Schnegg, E.** See **Leopold Pfaundler**.
- Schneider, C.**, bismuth subnitrate, 1882, A., 18.
- officinal benzoic acid, 1882, A., 1138.
- Schneider, Ernst Robert**, new sulphur salts, 1873, 1197; 1874, 228, 871; 1875, 43, 533.
- Schneider, Ernst Robert**, behaviour of cuprous sulphide to a solution of silver nitrate, 1875, 133, 612.
- atomic weight of antimony, 1879, A., 354; 1881, A., 78.
- behaviour of bismuth containing arsenic towards nitric acid, and the preparation of basic bismuth nitrate free from arsenic, 1880, A., 219.
- behaviour of iodine and arsenious sulphide at high temperatures, 1881, A., 686.
- Schneider, Franz Coelestin**, analyses of thermal springs near Battaglia, and of the sulphur springs of Trentschin-Teplitz, 1874, 881.
- Schneider, Franz Coelestin**, and **J. Koettstorfer**, analyses of the mineral waters of Mehadia in Hungary, 1873, 359.
- Schneider, G. H.**, inversion of the optical rotation of ordinary malic acid, 1880, A., 629.
- rotatory power of malic acid and its salts, 1881, A., 892.
- Schneider, Leopold**. See **F. Lipp**.
- Schneider, P.** (and others), fattening of pigs, 1882, A., 636.
- Schneider, Werner**. See **Hans Hübner**.
- Schnetzler, J. B.**, the action of borax on fermentation and putrefaction, 1875, 1286; 1876, i., 104, 990.
- Schnitzler, H.**, preparation of the chlorides of boron and silicon, 1874, 959.
- preparation of lithium, 1874, 961.
- Schnorrenpfeil, F.**, results with stall feeding of sheep, 1880, A., 503.
- Schober, J. B.**, valuation of animal charcoal, 1873, 1060.
- Schobig, Eugen**, on the purification of hydrogen gas for analytical purposes, 1877, i., 271.
- Schobig, Eugen**. See also **Casimir Wurster**.
- Schöffel, Rudolf**, estimation of chromium and tungsten in steel and in their alloys with iron, 1880, A., 288.
- Schöller, Cäsar**, aromatic sulphines, 1875, 258.
- Schönach, Julius**, solubility of a mixture of sodium and potassium chlorides, 1881, A., 223.
- Schönberg, von**. See **Ed. Sonntag**.
- Schöne, Emil**, researches on the dioxides of barium, strontium, and calcium, 1874, 127.
- relation of ozone to water, 1874, 222.
- atmospheric peroxide of hydrogen, 1875, 418; 1878, A., 552, 703.

- Schöne, Emil**, peroxide of hydrogen, 1878, A., 931; 1879, A., 353, 592.  
 — action of potassium iodide on hydrogen peroxide, 1879, A., 353; 1880, A., 606.  
 — estimation of hydrogen peroxide, 1879, A., 740.  
 — electrolysis of hydrogen peroxide, 1879, A., 878.  
 — decomposition of hydrogen peroxide in presence of alkalis and alkaline earths, 1880, A., 606.  
 — composition of hydrated barium dioxide, 1880, A., 610.  
 — proof of the existence of ozone in the atmosphere, 1881, A., 20, 345.  
 — observations made on the atmosphere with thallium papers, 1881, A., 20.
- Schönemann** (and others), cultivation of potatoes, 1882, A., 990.
- Schönn, J. L.**, absorption bands of water, petroleum, ammonia, alcohol, and glycerin, 1878, A., 693.
- Scholz, Robert**, synaphy (cohesion) of some substances hitherto uninvestigated, especially the compound ethers, 1873, 587.
- Scholz, Roman**, double platinoeyanides, 1881, A., 707.
- Schoop, Paul**, action of dimethylaniline on ethylene bromide and acetylene tetrabromide, 1881, A., 160.  
 — sulphoterephthalic acid, 1881, A., 278.
- Schoop, Paul**. See also **Carl Hell**.
- Schorlemmer, Carl**, the heptanes from petroleum, 1873, 319.  
 — cenanthylic acid, 1873, 617.  
 — the constitution of bleaching powder, 1874, 335.  
 — methylhexylcarbinol, 1874, 1029.  
 — note on the boiling point of methylhexylcarbinol, 1875, 209.  
 — remarks on T. M. Morgan's paper on the paraffins in Pennsylvanian petroleum, 1875, 306.  
 — on Groves' method of preparing chlorides, 1875, 308.  
 — on the normal paraffins, 1877, ii., 866; 1880, A., 158.  
 — action of hydrochloric acid on ethylene alcohol, 1881, T., 143.
- Schorlemmer, Carl**, and **Richard S. Dale**, suberone, 1874, 935.
- Schorlemmer, Carl**. See also **Richard S. Dale**, **Harry Grimshaw**.
- Schorm, J.**, conine and its compounds, 1882, A., 215.
- Schott, E. A.**, substitute for animal charcoal, 1882, A., 1016.
- Schott, Friedrich**, Scott's selenitic mortar, 1874, 96.
- Schott, Otto**, chemical changes occurring during the melting of glass, 1876, i., 121.  
 — on the constitution of glass, 1876, i., 788.  
 — crystals in glass, 1876, ii., 48.  
 — recovery of sulphur from gypsum and Glauber's salt in the manufacture of glass, 1876, ii., 670.  
 — estimation of iodine in varec, 1879, A., 1051.
- Schotten, Karl**, derivatives of *p*-homosalicylic aldehyde, 1878, A., 877.  
 — piperidine, 1882, A., 982.
- Schotten, Karl**. See also **Ferdinand Tiemann**.
- Schrader, Ernst**, phenylsulphonic acids, 1875, 1196.
- Schrage, F.**, detection of cinchona alkaloids, 1876, i., 777.  
 — the quinine alkaloids and potassium thiocyanate, 1878, A., 903.
- Schraube, Conrad**. See **Adolf von Baeyer, Heinrich Caro**.
- Schrauf, Albrecht**, rittingerite, 1873, 852.  
 — aragonite from Sasbach, 1873, 857.  
 — schrockingerite, a new mineral from Joachimsthal, 1874, 134.  
 — crystalline form of brookite, 1874, 235; 1878, A., 115.  
 — the brochantite group, 1874, 556.  
 — crystalline forms of binnite and of boracite, 1874, 556.  
 — white lead ore or cerussite, 1874, 664.  
 — veselyite, a cupric phosphate from the Banat, 1875, 546.  
 — roselite, 1875, 547.  
 — new minerals from the graphite deposit of Mugran in Bohemia, 1877, i., 581; ii., 859.  
 — the crystallographical constants of lanarkite, 1877, ii., 860.  
 — gismondine, 1878, A., 386.  
 — the tellurium ores of Siebenbürgen, 1879, A., 897.  
 — feuerblende (*rittingerite*) from Chaharceillo, 1880, A., 856.  
 — eggonite, 1881, A., 236.  
 — phosphorised copper ores, 1881, A., 368.  
 — arsenates from Joachimsthal, 1881, A., 532.
- Schrauf, Albrecht**, and **Edward Salisbury Dana**, thermoelectric properties of mineral species, 1874, 1129.

- Schreder, Josef**, the oxidation products of colophony and oil of turpentine, 1873, 889; 1874, 791.  
 — on the three isomeric thiophthalic acids, 1874, 990.  
 — fluoresceincarboxylic acid, 1879, A., 55.  
 — decomposition of rufigallic acid, 1881, A., 282.  
**Schreder, Josef**. See also *Ludwig (Ritter) Barth von Barthenau*.  
**Schreib, H.**, *o*-chlorobenzo-*p*-toluide and its derivatives, 1880, A., 557.  
**Schreiber, Gerhardt**, action of some metallic bases on monochloroacetic acid, 1876, ii., 398.  
**Schreiner, Ludwig**, boiling points of the ethereal salts of hydroxy- and alkyloxy-acids, 1879, A., 522.  
 — action of ethyl chlorocarbonate on amines, 1880, A., 311.  
 — two remarkable cases of metamerism in carbon compounds, 1881, A., 88.  
**Schreiner, Ludwig**. See also *Gust. Damm*.  
**Schreiner, Philipp**, cows' milk, 1878, A., 992.  
 — a new organic base in animal organisms, 1879, A., 72.  
**Schrodt, Max**, researches on the bones of a carnivorous animal, 1877, i., 328.  
 — composition of mares' milk, 1879, A., 550.  
 — creaming of milk in earthen pans, 1881, A., 771.  
 — experiments with an improved form of Reimer's creamer, 1882, A., 124.  
 — report of the experimental dairy at Kiel, 1880-1881, 1882, A., 1149.  
**Schrodt, Max**, and *Ph. Du Roi*, whole milk butter compared with cream butter, 1880, A., 932.  
 — experiments with skimming by the Swarts and Holstein systems, 1880, A., 934.  
**Schrodt, Max**, and *H. von Peter*, American flesh-meal for milch cows, 1881, A., 758.  
 — feeding milch cows with cotton cake, 1882, A., 636.  
**Schrodt, Max**, and *von Plotho*, creaming of milk by surface cooling, 1881, A., 857.  
**Schrodt, Max**, *Ph. Du Roi*, and *H. von Peter*, feeding cows with rice meal, 1881, A., 297.  
**Schrodt, Max**. See also *Hugo Weiske*.  
**Schröckinger, J. (Freiherr) von**, szminkite, a new manganous sulphate, 1878, A., 382.  
**Schröckinger, J. (Freiherr) von**, dietrichite, a new alum from Hungary, 1879, A., 440.  
**Schroeder, B.** See *Wilhelm Weith*.  
**Schröder, H.**, the volume constitution of solid substances, 1874, 760, 874; 1877, ii., 404, 698; 1878, A., 926; 1879, A., 768; 1881, A., 137.  
 — dissociation at the cleavage-surfaces of crystalline hydrates, 1875, 606.  
 — on a remarkable regularity in the volume relations of definite series of compounds, 1877, ii., 108.  
 — molecular volumes of the silver salts of organic acids, 1878, A., 133.  
 — law of molecular volumes or steres, 1878, A., 769; 1879, A., 197, 198, 430.  
 — molecular volumes of solid carbon compounds, 1879, A., 610; 1880, A., 21, 694.  
 — volume constitution of liquid compounds, 1881, A., 13, 220; 1882, A., 458.  
 — specific gravity and volume constitution of formates, 1881, A., 496.  
 — density and molecular volume of certain acetates, 1881, A., 969.  
 — relation between molecular refraction and chemical constitution, 1882, A., 351, 910, 1153.  
 — determination of the volume constitution of bodies in the solid state, when the volume constitution of the same bodies in the liquid state is known, 1882, A., 356.  
**Schroeder, Theodor Julius Reinhold von**, injury to vegetation caused by acid gases, 1874, 492; 1880, A., 196.  
 — course of the nitrogen and mineral constituents in the development of the early shoots, 1880, A., 335.  
 — mineral constituents of fir and birch, 1880, A., 343.  
 — constitution of frozen beech leaves, 1880, A., 416.  
 — amount of nitrogen in forest trees and in the under litter of leaves, 1880, A., 506.  
**Schroeder, Theodor Julius Reinhold von**. See also *Constantin Cuncleer*.  
**Schroder, Waldemar von**, estimation of nitrogen in urine, 1879, A., 829.  
**Schröder, Waldemar von** (and others), formation of hippuric acid in the animal organism, 1881, A., 928.  
**Schrotter, Anton (Ritter von Kristelli)**, preparation of tellurium, 1873, 175.  
 — behaviour of iodine and sulphur towards mercury, 1873, 476.



- Schrötter, Anton** (*Ritter von Kristelli*), working of the tellurium ore of Nagyág in Transylvania, 1873, 1003; 1874, 654.  
 — behaviour of diamond at high temperatures, 1874, 539.  
 — conversion of ordinary into amorphous phosphorus by electricity, 1874, 1059.  
 — obituary notice of, 1876, i., 622.
- Schrotter, Hugo**, bases from fusel oil, 1880, A., 234.  
 — reduction products of camphor, 1881, A., 100.  
 — oxidation of borneol acetate, 1882, A., 66.
- Schrötter, Hugo**. See also *Eduard von Gerichten*.
- Schrohe, A.**, conversion of allylene into mesitylene, 1875, 625.
- Schuchardt, Theodor**, sodium bisulphite as a means of removing chlorine after bleaching, 1874, 95, 718.
- Schübeler, Friedrich Christian**, influence of continuous sunlight on plants, 1880, A., 911.
- Schüle, M.**, action of biliary acids in the alimentary canal of dogs, 1878, A., 161.
- Schützenberger, Paul**, an isomeride of anthraquinone, 1873, 388.  
 — brominated ether, 1873, 487.  
 — action of iodine on some aromatic hydrocarbons, 1873, 498.  
 — beer yeast, 1874, 599; 1878, A., 234.  
 — combustion in the animal organism, 1874, 811.  
 — absorption of oxygen by yeast, 1874, 1005.  
 — decomposition of albumin, 1875, 651.  
 — butyric fermentation produced by aquatic plants in solutions of sugar, 1875, 910; 1876, i., 99.  
 — albumin, 1875, 1039; 1876, i., 715, 717, 944; 1879, A., 542.  
 — new derivatives of albuminoid substances, 1877, i., 725.  
 — action of water on the chlorides of iodine, 1877, ii., 110.  
 — a new derivative of indigotin, 1877, ii., 898.  
 — combustion in the eudiometer, 1878, A., 548.  
 — on the composition of wool, 1878, A., 592.  
 — allotropic modification of copper, 1878, A., 706.  
 — the allotropic condition of metals, 1878, A., 840.
- Schützenberger, Paul**, silicon nitride, 1880, A., 153.  
 — sodium hyposulphite, 1881, A., 682.  
 — hyposulphurous acid, 1881, A., 976.  
 — carboglucoic acid, 1881, A., 1033.
- Schützenberger, Paul**, and *A. Bourgeois*, researches on the carbon of white pig iron, 1875, 788.  
 — — — researches on the constitution of fibroin and of raw silk, 1876, i., 719.  
 — — — a few remarks on gelatinous substances, 1876, ii., 104.
- Schützenberger, Paul**, and *Albert Colson*, silicone, 1882, A., 570.
- Schützenberger, Paul**, and *Jean Alphonse Destrem*, researches on beer yeast, 1879, A., 476.  
 — — — composition of beer yeast, 1879, A., 477.  
 — — — on alcoholic fermentation, 1879, A., 550.
- Schützenberger, Paul**, and *A. Gérardin*, new process for estimating free oxygen, 1873, 88.
- Schützenberger, Paul**, and *N. Ionine*, composition of petroleum from the Caucassus, 1881, A., 705.
- Schützenberger, Paul**, and *Félix de Lalande*, on the indigo vat, 1874, 834.
- Schützenberger, Paul**, and *Ch. Eugène Quinquaud*, respiration of aquatic plants, 1873, 1252.
- Schützenberger, Paul**, and *Ch. Risler*, researches on the oxidising power of blood, 1873, 643.  
 — — — action of oxygen dissolved in water on reducing agents, 1873, 840.  
 — — — volumetric determination of free oxygen, 1873, 936.
- Schützle, Joseph**, to produce diamond hardness in graving tools and steel wire, 1873, 418.
- Schuhmeister, J.**, heat conductivity of cotton, wool, and silk, 1878, A., 831.
- Schulatschenko, A. Roman**, basic calcium carbonate in hydraulic cements, 1873, 97.
- Schuler, J.**, ferrieyanides, 1879, A., 702.
- Schuler, J.** See also *Alexander Bauer*, *Philipp Weselsky*.
- Schulerud, Ludwig**, on chromates and dichromates, 1879, A., 298.  
 — action of hydrochloric acid on organic amides, 1881, A., 42.
- Schuller, Alois**, heat of formation of water, 1882, A., 135, 682.  
 — formation of hydrogen peroxide during combustion, 1882, A., 691.
- Schuller, Alois**, and *Vince Wartha*, calorimetric researches, 1878, A., 4.

- Schulte, Carl.** See *Carl Arnold August Michaelis*.
- Schulten, August Benjamin (Baron) de,** artificial analcime, 1881, A., 25; 1882, A., 479.
- Schultz, A.,** antiseptic action of salicylic acid, 1880, A., 515.
- Schultz, Gustav Theodor August Otto,** diphenylbenzene, 1873, 888.  
— derivatives of diphenyl, 1874, 468; 1875, 148; 1881, A., 907.  
— diphenyl and diphenylene, 1876, ii., 197.  
— formation of naphthalene from turpentine oil, 1876, ii., 197.  
— decomposition of oil of turpentine at a high temperature, 1877, ii., 341.  
— benzerythrene, 1878, A., 323.  
— constitution of phenanthrene, 1878, A., 511; 1879, A., 538, 653; 1880, A., 814.  
— diphenyl bases, 1881, A., 907.  
— molecular rearrangement of certain hydrazo-compounds, 1882, A., 1062.
- Schultz, Gustav Theodor August Otto,** and *Hermann Strasser*, diphenylene and  $\delta$ -diamidodiphenyl, 1881, A., 604.
- Schultz, Gustav Theodor August Otto,** *Hermann Schmidt*, and *Hermann Strasser*, diphenylene, 1881, A., 911.
- Schultz, Gustav Theodor August Otto.** See also *Richard Anschütz*, *Francis Robert Japp*, *Hermann von Knapp*, *Sigismund Levy*, *Georg Neuböffer*, *Hermann Schmidt*, *Hermann Strasser*.
- Schultz, Richard,** three dichlorobenzoic acids, 1877, ii., 781.
- Schultze, Hugo,** quality of milk, 1880, A., 352.  
— manuring experiments on sugar-beet in Brunswick, 1882, A., 767.
- Schultze, Wilhelm,** defuselation of crude spirit by wood-charcoal, 1873, 303.  
— testing malt, 1879, A., 569; 1880, A., 71.  
— malt extract and maltose in beer mash, 1880, A., 776.  
— moisture in malting barley, 1880, A., 776.
- Schultze, Wilhelm.** See also *Theodor Langer*.
- Schultzen, Otto,** and *Marcellus Nencki*, estimation of uric acid by Bunsen's process, 1873, 535.
- Schulz, H.,** action of acid chlorides and bromides on quinones, 1882, A., 838.
- Schulz, Hugo C. E.,** alkaloids of *Lupinus luteus*, 1880, A., 416.
- Schulz, Hugo C. E., Eugen Wildt** (and others), poisoning of sheep by lupins, 1880, A., 57.
- Schulz, Julius.** See *Robert Frühling*.
- Schulz, Paul Friedrich Hugo,** on the relation between tissue metamorphosis and body temperature in Amphibia, 1877, i., 327.  
— action of cacodylic acid on the animal organism, 1879, A., 476.  
— action of mono- and di-phenyl-arsinic acids on animals, 1879, A., 476.  
— physiological action of oxalethyline, 1881, A., 246.  
— theory of the poisonous action of arsenic, 1882, A., 1223.
- Schulz, Paul Friedrich Hugo.** See also *Karl Binz*.
- Schulze, Alfred,** expansion of various standard solutions by heat, 1882, A., 1230.
- Schulze, Bernhard,** formation of fat in animals, 1882, A., 878.
- Schulze, Bernhard.** See also *Hugo Weiske*.
- Schulze, C. F.,** the constituents of cubebs with some remarks on cubebic acid, 1873, 1148.
- Schulze, Ernst (Zürich),** composition of suint, 1873, 513, 920, 1219.  
— digestibility of the fat of hay, 1874, 85.  
— maltose, 1875, 347.  
— formation of sulphuric acid in seedlings, 1877, i., 104.  
— analysis of the ash of lignite, 1877, i., 287.  
— remarks upon Sachsse and Kormann's method for the determination of nitrogen when existing in the form of amides, 1877, ii., 917.  
— estimation of ammonia in vegetable products, 1878, A., 608.  
— separation of cholesterin, 1878, A., 612.  
— formation of sulphates by the decomposition of albumin in germinating plants, 1878, A., 909.  
— specific rotatory power of isocholesterin, 1879, A., 634.  
— decomposition of albumin in plants, 1880, A., 493; 1881, A., 634.  
— estimation of albuminoids and non-albuminoidal nitrogen compounds in various kinds of fodder, 1880, A., 588.  
— quantitative estimation of albuminoids and non-albuminous matter in plants, 1880, A., 764; 1882, A., 901.  
— nitrogenous constituents of plants, 1882, A., 645.  
— estimation of amides in vegetable extracts, 1882, A., 1006.  
— occurrence of hypoxanthine in potatoes, 1882, A., 1125.

- Schulze, Ernst** (Zürich), and **Johann Barbieri**, occurrence of an amide of glutamic acid in the young plants of the pumpkin, 1877, ii., 324.
- the albuminoids and amides contained in potatoes, 1878, A., 329.
- occurrence of aspartic acid and tyrosin in the young shoots of the gourd, 1878, A., 663.
- leucin from young pumpkin plants, 1878, A., 357.
- lupinin, a new glucoside, 1879, A., 467.
- decomposition of albuminoids in pumpkin sprouts, 1880, A., 180.
- leucin and tyrosin in potatoes, 1880, A., 342.
- suint, 1880, A., 520.
- estimation of nitrogen compounds in plants, 1881, A., 312.
- occurrence of allantoin in vegetable organisms, 1881, A., 1061.
- occurrence of phenylamidopropionic acid amongst the products of decomposition of albuminoid bodies, 1882, A., 189.
- hydantoin in plants, 1882, A., 243.
- presence of peptones in plants, 1882, A., 318.
- allantoin and asparagin in young leaves, 1882, A., 1195.
- cholesterin, 1882, A., 1202.
- Schulze, Ernst** (Zürich), and **Edmund Eugster**, contributions to the knowledge of the nitrogenous constituents of potatoes, 1882, A., 885.
- Schulze, Ernst** (Zürich), and **Wenzel L. Umlauft**, asparagin in lupin shoots, 1875, 1284.
- Schulze, Ernst** (Zürich), and **A. Urich**, composition of wool-grease, 1874, 908, 1079.
- nitrogenous constituents of mangold wurzel, 1876, i., 419; 1878, A., 84.
- note on the occurrence of betaine in mangold wurzels, 1876, i., 420.
- on selenodiglycollic acid, 1876, i., 899.
- Schulze, Ernst** (Zürich), **Wenzel L. Umlauft**, and **A. Urich**, the germination of lupin seeds, 1877, i., 104.
- Schulze, Ernst** (Bonn). See **Otto Wallach**.
- Schulze, F.**, examination of sugar beet and the amount of sugar the roots contain, 1880, A., 586.
- Schulze, Franz Ferdinand**, transpiration of saline solutions, 1873, 468.
- Schulze, Franz Ferdinand**, estimation of nitric acid, 1873, 529.
- Schulze, Hans Oscar**, lecture experiment, 1880, A., 366.
- oxidation of haloid salts, 1880, A., 436.
- liquid sulphur phosphide, 1881, A., 72.
- preparation of sulphuryl chloride; a contribution to our knowledge of catalysis, 1882, A., 10.
- Schulze, Hans Oscar**, and **Alfred Wilhelm Stelzner**, conversion of the distillation vessels of zinc furnaces into zinc spinel and tridymite, 1881, A., 520.
- Schulze, K. E.**, phorone from glycerol, 1882, A., 613.
- Schumacher, Aug.**, manuring experiments on arable land, 1881, A., 61.
- Schumacher, Eugen**, growth-phenomena on quartz crystals from Krummendorf, near Strehlen, 1879, A., 901.
- idocrase in the limestone strata of Deutsch-Tschammendorf, 1879, A., 902.
- granular plagioclase in the limestone strata of Geppersdorf near Strehlen, Silesia, 1879, A., 903.
- the mountain group of the Rummelsberg near Strehlen, 1881, A., 698.
- Schumann, Camillo**, estimation of phosphoric acid, 1873, 940.
- estimation of phosphoric acid in guano, 1876, ii., 553.
- Schumann, Karl Moritz**, on fermentation, 1875, 662.
- Schumann, Otto**, affinity of metals for sulphur and oxygen, 1877, ii., 704.
- vapour densities of homologous ethers, 1881, A., 782.
- Schumann, Otto**. See also **Julius Lothar Meyer**, **Carl Arnold August Michaelis**.
- Schunck, Edward**, methylalizarin and ethylalizarin, 1873, 900.
- colour of Nankin cotton, 1874, 720.
- indigo-blue from *Polygonum tinctorium* and other plants, 1878, A., 885; 1879, A., 532.
- on indigo-purpurin and indirubin, 1879, T., 528.
- notes on the purple of the ancients, 1879, T., 589; 1880, T., 613.
- chlorophyll from *Eucalyptus Globulus*, 1880, A., 894.
- Schunck, Edward**, and **Hermann Roemer**, anthrallavic and isoanthrallavic acids, 1876, i., 591; ii., 88.
- anthrapurpurin and flavo-purpurin, 1876, ii., 299.

- Schunck, Edward, and Hermann Roemer**, notes on madder colouring matters, 1877, i., 665; 1878, T., 422.
- — — purpurin, 1877, ii., 624.
- — — comparison of  $\epsilon$ -purpurin with purpuroxanthinecarbonic acid, and on anthraflavone, 1877, ii., 788; 1878, A., 510.
- — — anthraflavone, and a new dioxyanthraquinone, 1878, A., 77.
- — — derivatives of flavopurpurin, 1878, A., 322.
- — — anthranfin, a new dioxyanthraquinone from *m*-oxybenzoic acid, 1878, A., 984.
- — — *m*-benzodioxyanthraquinone, 1879, A., 68.
- — —  $\alpha$ - and  $\beta$ -nitroalizarins and  $\beta$ -amidoalizarin, 1879, A., 654.
- — — nitroalizarin, 1879, A., 725.
- — — detection of alizarin, *iso*- and flavo-purpurins; and the estimation of alizarin, 1880, A., 424.
- Schuster, Arthur**, the spectrum of nitrogen, 1873, 340.
- — — spectra of metalloids: spectrum of oxygen, 1880, A., 430.
- Schuster, Arthur**. See also (*Lord*) **Rayleigh, (Sir) Henry Enfield Roscoe**.
- Schuster, Maximilian Josef**, optical character of tridymite from the Euganean Hills, 1878, A., 945.
- — — optical orientation of plagioclases, 1881, A., 397.
- — — on the bombs ("Auswürflinge") in the basalt tufa from Reys in Transylvania, 1881, A., 703.
- Schwab, E.** See **Ludwig Medicus**.
- Schwab, Johann.** See **Filipp Hess**.
- Schwamborn, Engelbert**, effluent water from cloth factories, 1876, i., 824.
- Schwanert, Franz Hugo**, examination of corpses for alkaloids, 1875, 293.
- — — dinitrotoluenesulphonic acids, 1877, ii., 469, 612.
- — — occurrence of ammonium magnesium phosphate in a sample of old urine, 1882, A., 637.
- Schwartz, Victor**, testing of aqueous liquids for blood, 1877, i., 754.
- Schwarz, A. (Ritter) von**, peaty soils, 1880, A., 182.
- Schwarz, Carl Leonhard Heinrich**, composition of various kinds of glass, 1873, 201.
- — — aluminium gold purple, 1873, 205.
- — — preparation of pure *d*-glucose, 1873, 265.
- — — decolorising action of animal charcoal, 1873, 302.
- — — dynamite, 1873, 304.
- Schwarz, Carl Leonhard Heinrich**, preparation of crystallised grape sugar, 1873, 370.
- — — a simple pyrometer, 1876, i., 671.
- — — guano produced by bats, 1876, i., 730.
- — — determination of theine, 1876, i., 778.
- — — washing of kaolin, 1876, i., 789.
- — — the Bessemer process, 1876, i., 794.
- — — utilisation of calamine residues, 1876, i., 795.
- — — baryta in furnace dust, 1876, i., 796.
- — — colouring brass, 1876, i., 796; 1878, A., 188.
- — — preparation of copper phosphide, 1876, i., 797.
- — — use of the so-called chrome-glue (*chromlein*), 1876, i., 804.
- — — continuous formation of nitric acid from ammonia and atmospheric oxygen, 1876, i., 878.
- — — gold in pyrites, 1876, i., 890.
- — — lucifer match compositions, 1876, ii., 221.
- — — kainite from Kalusz in Galicia, 1876, ii., 224.
- — — the utilisation of human excrements, 1876, ii., 343.
- — — purification of gas, 1878, A., 178.
- — — two methods of getting sugar from molasses, 1878, A., 179.
- — — techno-chemical communications.
1. Analysis of the smoke of Virginian cigars; 2. Lead from Raibl; 3. Brass colouring, 1878, A., 188.
- — — new explosives, 1878, A., 350.
- — — preparation of copal varnish: the composition of copal and its alteration by fusion, 1878, A., 627.
- — — formula of hipparaffin, 1879, A., 650.
- — — composition of pyropissite, 1879, A., 1021.
- — — homofluorescein a new colouring matter from orcinol, 1880, A., 551.
- — — apparatus for the volumetric estimation of nitrogen, 1881, A., 62.
- — — preparation of orcinolcarboxylic acid (*pseudoreillic acid*), 1881, A., 96.
- — — preparation of triphenylmethane, tetraphenylethylene, and tetratolylethylene, 1881, A., 912.
- Schwarz, Carl Leonhard Heinrich, and Peter Pastrovich**, elementary analysis of organic salts of alkalis and alkaline earths, 1881, A., 124.
- Schwarz, Edward**, forensic chemical determination of gelsemine in animal liquids and tissues, 1882, A., 1141.



- Schwarzenbach, Valentin von Schüpfen**, gilding of glass, 1875, 1060.  
 — behaviour of metallic amines, 1876, i., 341.
- Schwarzer, F.**, halogen derivatives of anthracene, 1877, ii., 493.
- Schwarzer, F.** See also *Carl Theodor Liebermann*.
- Schwarzer, M.** See *Hermann Roemer*.
- Schwebel, Paul Heinrich**, aromatic hydantoins, 1878, A., 301, 798.  
 — action of bromine water and of nitrous acid on phenylglycocine, 1878, A., 795.
- Schwebel, Paul Heinrich**. See also *Carl Otakar Čech, Julius Philipp*.
- Schweitzer, Paul**, some new acid ammonium sulphates, 1877, ii., 703.
- Schwerin-Putzar, (Graf) von**, manuring experiments with superphosphates and Chili saltpetre, 1880, A., 507.
- Seichilone, Salvatore**, dilatation of fused sulphur, 1878, A., 553.  
 — oxazobenzene and some of its derivatives, 1882, A., 726.  
 — thymolactic acid, 1882, A., 848.  
 — orcinoldiazotoluene, 1882, A., 1285.
- Seichilone, Salvatore**. See also *Emanuele Paternò*.
- Scolosuboff, Dmitri P.**, localisation of arsenic in tissues of poisoned animals, 1876, i., 92.
- Scribani**. See *Dotto-Scribani*.
- Scurati-Manzoni, Giuseppe**, the action of some reagents on the principal organic colouring matters, 1877, i., 310.  
 — hyposulphite of sodium ( $\text{SO}_2\text{Na}_2$ ) as a reagent in the analysis of the colouring matters of dyed stuffs, 1877, i., 349.
- Seaman, Robert**. See *John Benbow Jones*.
- Seamon, William H.**, iodammonium iodide, 1882, A., 8.
- Sear, Frederick**, estimation of neutral fats, and palmitic and oleic acids in palm oils and autoclaved materials, 1882, A., 342.
- Sehor, Fr.**, bone-charcoal and bye-products in its formation, 1874, 610.
- Sedlacek, Josef**, a new siphon, 1873, 835.
- Seegen, Josef**, on the reducing action between sugar and uric acid, 1876, ii., 292.  
 — transformation of glycogen by the salivary and pancreatic ferments, 1877, ii., 911; 1879, A., 548.  
 — action of the liver on peptone, 1882, A., 540.
- Seegen, Josef**, and **Florian Kratschmer**, contribution to the knowledge of the saccharifying ferments, 1877, ii., 505.  
 — nature of the sugar in the liver, 1880, A., 866.  
 — formation of sugar in the liver, 1880, A., 905; 1882, A., 540.
- Seegen, Josef**, and **Josef Nowak**, on the methods for the estimation of nitrogen in albuminous bodies, 1873, 1063; 1875, 192.  
 — gaseous nitrogen, a product of the decomposition of albuminoids in the body, 1880, A., 272.  
 — elimination of gaseous nitrogen by animals, 1882, A., 636.
- Seelheim, Ferdinand**, volatility of platinum in chlorine, 1880, A., 94.  
 — percolation of water through soils, 1881, A., 303.
- Seelhorst, G.**, phosphorescent substances, 1873, 949.  
 — precipitation of zinc by hydrogen sulphide in presence of hydropotassic sulphate, 1876, ii., 554.
- Seelig, Eduard**, derivatives of mucic acid, 1879, A., 783.  
 — an improved form of drying apparatus, 1882, A., 244.
- Seger, H.**, colours of bricks, 1873, 951.  
 — composition of clay for porcelain, 1881, A., 324.
- Segura, Ricardo**, direct reduction of silver from its sulphide, 1877, ii., 843.  
 — solubility of mercury in water, 1877, ii., 843.
- Seidel, O.**, salts of plumbic acid, 1880, A., 94.
- Seidler, Hermann**, laboratory gasometer, 1877, ii., 275.
- Seidler, Paul**, chloronaphthylamine, 1878, A., 983.
- Seidler, Paul**. See also *Carl Theodor Liebermann*.
- Sekulić, M.**, direct visibility of the ultra-violet rays, 1873, 125.
- Selezneff, W.**, action of sulphur on glass, 1882, A., 696.
- Seligmann, Gustav**, crystallographic notices, 1881, A., 397.  
 — Russian topaz and enstatite from Snarum, 1881, A., 694.
- Sell, Eugen**, mustard oils: (isosulphocyanic ethers or sulphocarbitimides), 1873, 881.
- Sell, Eugen**, and **Maximilian Salzmann**, action of bromine on sodium ethylate, 1874, 784.
- Sell, Eugen**, and **Georg Zierold**, isocyanophenyl chloride, 1875, 269.

- Sell, *Eugen*. See also *Bernhard Proskauer*.
- Sell, *William James*, on the volumetric determination of chromium, 1879, T., 292.
- Sella, *Quintino*, crystalline forms of Sardinian anglesite, 1880, A., 96; 1881, A., 397.
- Selldén, *Hjelm*, preparation of pepsin, 1874, 724.
- Sellmeier, *W.*, on the vibrations produced in the particles of bodies by the vibrations of the ether, and their reaction on the latter, especially with reference to the explanation of dispersion and its anomalies, 1873, 242.
- Selmi, *Antonio* (and others), lupin seeds as a manure, 1880, A., 507.
- Selmi, *Francesco*, contributions to toxicological chemistry, 1873, 1165; 1874, 607.
- milk, 1875, 657.
- occurrence of phosphorus bases in the urine, etc. in acute phosphorus poisoning, 1875, 1059; 1882, A., 325.
- on the detection of the poisonous alkaloids, 1876, i., 113.
- an alkaloid occurring in the brain and liver and in the wild poppy, 1876, i., 938.
- decomposition of atropine in contact with putrefying animal substances, 1876, ii., 101.
- atropine, 1877, i., 93.
- chemical toxicology of phosphorus, 1877, i., 108; 1881, A., 309.
- modification of the process for extracting the poisonous alkaloids from the viscera, 1877, i., 110.
- some volatile products of the putrefaction of brain matter, 1877, i., 730.
- poisonous and crystallisable alkaloid from an exhumed corpse containing arsenic, 1879, A., 734.
- formation of poisonous alkaloids in the human corpse, 1879, A., 734.
- alkaloids from the decomposition of albumin, 1880, A., 898.
- chemical toxicology of arsenic, 1881, A., 311.
- pathological bases, 1882, A., 711.
- Sels, white paint for metallic surfaces, 1873, 205.
- Semjanitzin, *Alexander*, allylmethylpropylcarbinol, 1880, A., 372.
- allylmethylpropylcarbinol, and  $\beta$ -methylpropylethylenelactic acid, 1881, A., 402.
- Semjanitzin, *Alexander*, and *Alexander M. Saytzeff*, hydroxyvaleric acid obtained by oxidation of allyldimethylcarbinol, 1879, A., 618.
- Senderens, *Jean Baptiste*. See *Edouard Filhol*.
- Sendtner, *Rudolf*, some new salts of uranyl, 1879, A., 507.
- action of ethyl oxalate on dimethyl-*p*-phenylenediamine, 1879, A., 627.
- Sendtner, *Rudolf*. See also *Casimir Wurster*.
- Senff, *Max Gustav*, substituted glycollic acids, 1881, A., 1127.
- Senfter, *Rich.*, diabase, 1873, 736.
- Senhofer, *Carl*, phenoltrisulphonic acid, 1874, 265.
- benzenetrisulphonic acid, 1875, 366.
- naphthalenetetrasulphonic acid, 1876, i., 587; 1882, A., 621.
- Senhofer, *Carl*, and *Karl Brunner*, direct introduction of carboxyl into phenols and aromatic acids. Parts I.—III., 1881, A., 265.
- Senhofer, *Carl*, and *Philipp Sarlay*, direct introduction of carboxyl groups into phenols and aromatic acids. Part IV., 1881, A., 1140.
- Senhofer, *Carl*. See also *Ludwig (Ritter) Barth von Barthenau*.
- Senier, *Alfred*, Moffit's method of soap analysis, 1875, 1055, 1296.
- adulteration of Peru balsam, 1882, A., 112.
- Senier, *Alfred*, and *Alfred J. G. Lowe*, a new test for glycerin, 1878, T., 438.
- the colour of podophyllum resin, 1878, A., 326.
- Senier, *Harold*, colouring matter of the petals of *Rosa gallica*, 1877, ii., 502.
- note on *Rheum officinale* grown in England, 1878, A., 240.
- Serane, *Jean*. See *Joachim Isidore Pierre*.
- Seroz and Chognard, manufacture of archil-extract and archil-dough, 1876, ii., 451.
- Sesemann, (*Fräulein*) *Lydia*, tetramethylaniline from coal-tar, 1873, 912.
- benzylated and dibenzylated acetic acid, 1874, 69.
- dibenzylacetic acid and a new synthesis of homotoluic acid, 1875, 73.
- Sestini, *Fausto*, analysis of *Posidonia oceanica*, 1875, 184.
- causes of loss in extracting sulphur, 1875, 335.
- action of acetyl chloride on santonin acid and santonin, 1875, 895.
- estimation of the atonic group  $C_2H_3O$  in acetylated substitution products, 1875, 915.

- Sestini, Fausto**, setting of textile plants, 1875, 1061.
- analysis of guano produced by bats (*guano di pipistrello*), 1876, i., 730.
  - action of molten sulphur on gypsum and calcium carbonate: use of ginese (residue in the preparation of sulphur) in agriculture, 1876, i., 879.
  - ethyl santonate, 1877, i., 90.
  - photosantonie acid, 1877, i., 471.
  - portable apparatus for volumetric analysis, 1877, ii., 798.
  - estimation of proteids in forage, 1878, A., 740.
  - liquorice root, 1878, A., 740.
  - the glucoside of liquorice, 1879, A., 727.
  - some neutral ammonium salts, citrate, phosphate, and photosantonate, 1880, A., 104.
  - estimation of albuminoid nitrogen in fodders, 1880, A., 190.
  - physico-chemical analysis of clay soils, 1880, A., 511.
  - ulmic compounds formed from sugar by the action of acids, 1880, A., 538.
  - sacculmic acid and sacculmin, 1880, A., 865.
  - action of vapours on seeds, 1881, A., 837.
  - sacculmin compounds, 1882, A., 605.
  - "falaseo" manure from seaweed and marshweeds, 1882, A., 652.
  - action of halogens on sacculmic compounds, 1882, A., 1181.
- Sestini, Fausto, and Leobaldo Danesi**, derivatives of photosantonie acid, 1882, A., 627.
- Sestini, Fausto, and Giacomo Del Torre**, experiments on the cultivation of sugar beet in the Campagna Romana, 1873, 1254.
- Italian wines in the Vienna Exhibition: wine residues, 1875, 791.
  - residues from the manufacture of olive oil, 1875, 1049.
  - composition of grapes from the Roman Province, 1875, 1279.
  - do the Fungi which form and grow upon organic substances derive nitrogen from the atmosphere? 1876, i., 736.
- Sestini, Fausto, and Angiolo Funaro**, diastatic action of certain fodders, 1882, A., 1128.
- action of hydrogen on thiocyanic acid, and decomposition of the thiocyanates in the residues from gas manufacture, 1882, A., 1180.
- Sestini, Fausto, M. Marro, and Giacomo Del Torre**, sugar beet experiments at Monte Rotondo (Campagna) in 1873, 1875, 1047.
- Sestini, Fausto, M. Marro, and D. Misani**, fodder plants of the Roman Campagna, 1875, 1046.
- Sestini, Fausto**. See also **Stanislao Cannizzaro, Luigi Moschini**.
- Setschenoff, Iwan M.**, absorption of carbon dioxide by saline solutions, 1874, 334.
- on absorptiometry: its application to the condition of carbonic anhydride in blood, 1874, 486.
  - absorption of carbon dioxide by solutions of sodium salts, 1875, 864.
  - action of carbonic acid on sodium acetates, 1875, 879.
  - absorption of carbon dioxide by solutions of neutral sodium phosphate, 1875, 1159.
  - absorption of carbon dioxide by blood, 1877, ii., 630.
  - on the constituents of blood-serum by which the absorption of carbon dioxide is determined, 1878, A., 519.
  - respiration under reduced pressure, 1880, A., 903.
- Settegast, Hans**, contributions to quantitative spectrum analysis, 1879, A., 828.
- Settegast, Hans**. See also **Carl Heinrich Leopold Ritthausen**.
- Setterberg, Carl**, preparation of rubidium and cesium and of their salts, 1882, A., 464.
- Seuberlich, Carl**, action of sulphuric acid upon a mixture of benzoic and gallic acids, 1877, ii., 894.
- preparation of potassium ferri-cyanide, 1881, A., 239.
- Seubert, Karl Friedrich Otto**, atomic weight of iridium, 1879, A., 125.
- double salts of dyad iridium, 1879, A., 125.
  - atomic weight of platinum, 1881, A., 514.
  - estimation of phenol in surgical dressings, 1882, A., 106.
- Seubert, Karl Friedrich Otto, and Gustav Link**, analyses of nephrites from pile dwellings, 1882, A., 931.
- Seucker, P.**, treatment of must in the presshouse, 1881, A., 331.
- Seward, Henry**, estimation of acetic acid in lead acetate, 1874, 712.
- Sexton, Alexander Humboldt**, estimation of arsenic in copper, 1882, A., 1135.
- Seyberth, Hermann**, arseniomolybdic acid, 1874, 776.

- Seyberth, Hermann**, isethionamide, 1874, 790.
- Seyffart, Johannes**, guano deposits in the south of Peru, 1875, 1017.
- Seyms, George H.**, the relation of franklinite to the spinel group, 1877, i., 701.
- Shadwell, J.** See **Ludwig Claisen**.
- Sharples, Stephen Paschall**, zinc crystals, 1874, 961.
- corrosion of a tin tank, 1874, 1187.
- determination of fat in milk, 1881, A., 851.
- Shaw, Frederic William**, and **Thomas Carnelley**, on the influence of ammonium sulphide in preventing the action of various solutions on copper, 1877, i., 642.
- Shenstone, William Ashwell**, note on the action of dilute nitric acid on brucine, 1877, ii., 499.
- false angostura bark and brucine, 1878, A., 326.
- note on igasurine, 1880, T., 235.
- the alkaloids of *Nux vomica*, 1881, T., 453.
- Shenstone, William Ashwell**. See also **William Augustus Tilden**.
- Shepard, Charles Upham, senior**, on a meteoric iron lately found in Eldorado County, California, 1873, 255.
- the corundum region of N. Carolina and Georgia, 1873, 257.
- the meteoric stone of Wacoula, Kansas, 1877, i., 290.
- mineralogical notices, 1881, A., 381.
- meteoric iron from Ivanpah, California, 1881, A., 394.
- the meteorite of Estherville, Emmet Co., Iowa, 1881, A., 395.
- meteoric iron of unknown locality in the Smithsonian Museum, 1881, A., 1111.
- meteoric iron from Lexington Co., S. Carolina, 1882, A., 153.
- Shepard, Charles Upham, junior**, reduction of soluble phosphate in superphosphate, 1874, 92.
- Shepard, Henry Wardwell**. See **John Benbow Jones**.
- Shimer, Porter W.** See **Thomas M. Drown**.
- Short, Frederick William**, preparation of calcium hypophosphite, 1882, A., 695.
- Shull, D. F.**, *Erythroxylum Coca*, 1880, A., 411.
- Shuttleworth, Edward Buckingham**, on the power of glycerin to diminish the activity of astringents, 1876, i., 411.
- Shuttleworth, Edward Buckingham**, effect of intense cold on ferrie hydrate, 1878, A., 936.
- Sicherer, Johann Conrad Ludwig**. See **Antoine Paul Nicolas Franchimont**.
- Sidot, Th.**, carbon monosulphide, 1875, 1236.
- on a phosphate of lime glass, 1877, ii., 842.
- copper phosphides, 1877, ii., 844.
- Siebel, J. E.**, the manufacture of soda, 1875, 670.
- Sieber, (Fran) Nadina**, antiseptic action of acids, 1880, A., 72.
- a supposed conversion of albumin into fat in the ripening of Roquefort cheese, 1880, A., 835.
- chemical composition of mildew fungus, 1882, A., 642.
- Sieber, (Fran) Nadina**. See also **Marcellus Nencki**.
- Siebold, Louis**, copaiba testing, 1877, ii., 931.
- titration of hydrocyanic acid and cyanides, and its relation to alkalimetry, 1879, A., 486.
- specific gravity of liquids, 1880, A., 61.
- testing drugs, 1880, A., 71.
- Sieburger, Fr.**, preparation of a very good adhesive and durable paste, 1875, 306.
- permanent paint for fire-proofing wood, 1873, 307.
- soldering iron and steel, 1874, 719.
- Siedamgrotzky, Otto Alexander**, and **Victor Hofmeister**, influence of lactic acid in fodder, 1880, A., 905.
- Siegfried, L.**, phosphorite as a manure, 1882, A., 92.
- Siegfried, L.** See also **Heinrich Albert**.
- Siegwart, Eduard**, estimation of caustic soda in commercial soda, in presence of sodium carbonate, 1874, 1007.
- etching on glass, 1876, ii., 447.
- Siemens, (Sir) Charles William**, on smelting iron and steel, 1873, 661.
- preparation of iron and steel direct from the ore, 1878, A., 619.
- on the influence of electric light on vegetation and on certain physical principles involved, 1881, A., 962; 1882, A., 326, 639.
- Siemens, (Sir) Charles William**, and **Alfred Kirby Huntington**, the electric furnace, 1882, A., 1241.
- Siemens, Ernst Werner von**, dependence of the electric conductivity of selenium on heat and light, 1877, i., 677; 1878, A., 361.



- Siemens, Ernst Werner von**, electric conductivity of carbon as affected by temperature, 1880, A., 837.
- Siemens, R.**, silvering of glass, 1873, 419.
- action of phosphorus pentachloride on sulphacetic acid, 1873, 1022.
- on the Hunt and Douglas copper process, 1874, 1023.
- Siemienski, J. von.** See **Richard Anschütz**.
- Siepermann, Otto.** See **Wilhelm Staedel**.
- Siepermann, Wilhelm.** See **Rudolph Fittig**.
- Siewert, E.**, analyses of hops, 1879, A., 957.
- Siewert, Max W.**, estimation of fatty matters in feeding stuffs, 1879, A., 558.
- estimation of starch in potatoes, 1880, A., 512.
- Sigel, Otto**, constituents of the distilled water and volatile oil of arnica, 1874, 377.
- Sigel, Otto.** See also **Emil Erlenmeyer**.
- Silber, Paul G.**, action of hydrochloric acid at high temperatures on ultramarine rich in silica, 1881, A., 138.
- sodium aluminium silicates formed by the action of sodium carbonate on kaolin, 1881, A., 684.
- Silber, Paul G.** See also **Giacomo Luigi Ciamician**.
- Silliman, Benjamin, junior**, meteoric iron from Shingle Springs, Eldorado County, California, 1874, 34.
- mineralogical notes on Utah, California, and Nevada: description of priceite, a new calcium borate, 1874, 344.
- tellurium ores of Colorado, 1875, 136.
- association of gold with scheelite in Idaho, U.S., 1877, ii., 713.
- method of imparting sonorousness to soft metallic alloys, 1878, A., 97.
- mineralogical notices: vanadates and thenardite, 1881, A., 1108.
- Silow, Petr A.**, dielectric constants of liquids, 1876, ii., 267.
- Silva, Roberto Duarte da**, isopropyllic ethers, 1873, 367.
- action of some monatomic sodium alcohols on camphor, 1875, 1193.
- reducing action of hydriodic acid at low temperatures on ethers and mixed ethers, 1876, i., 60.
- synthesis of diphenylpropane: new method of forming dibenzyl, 1880, A., 259.
- Silva, Roberto Duarte da**, products accompanying dibenzyl in the aluminium chloride reaction, 1881, A., 913.
- glyceric ether, 1881, A., 1122.
- action of hydriodic acid on propylene chloriodide and isopropyl chloride, 1882, A., 294.
- Silva, Roberto Duarte da.** See also **Charles Friedel**.
- Silvestri, Orazio**, the sulphuretted springs of S. Venera al Pozzo, at the eastern base of Etna, 1873, 863.
- crystallisation of sulphur, 1875, 335.
- chemical decomposition (dissociation) applied to the interpretation of some volcanic phenomena: synthesis and analysis of a new mineral from Etna, 1876, i., 200.
- the occurrence of iron nitride amongst the fumarole products of Etna, and its artificial formation, 1876, ii., 177.
- hydrocarbons of the paraffin series found in a lava from Etna, 1877, i., 704.
- meteoric dust containing a large quantity of metallic iron which fell at Catania in 1880, 1881, A., 561.
- crystallised paraffin in geodes in a basaltic lava, 1882, A., 810.
- chemical nature of liquid inclosures found in crystals of native sulphur, 1882, A., 810.
- Simand, Ferdinand**, Löwenthal's method of estimating tannin, 1882, A., 1237.
- Simon, Ch.**, ratio of the two specific heats of a gas, 1877, i., 162.
- Simon, E.**, an apparatus for the quantitative estimation of fat, 1874, 293.
- humous substances in their relation to the nourishment of plants, 1876, i., 731.
- Simon, Sigismund Edward**, combinations of lithium and magnesium chlorides with alcohols, 1880, A., 310.
- dinitroxyanthraquinone, 1881, A., 608.
- preparation of alizarin-orange, 1882, A., 863.
- Simon, Sigismund Edward.** See also **Hans Hübner, Carl Theodor Liebermann**.
- Simonin, L.**, the part played by coal dust in producing explosions in coal mines, 1879, A., 98.
- a new process for the treatment of iron and copper pyrites in the dry way, 1879, A., 563.

- Simon-Legrand**, comparison of "diffusion" and "press" residues as foods, 1881, A., 757.
- Simpkins, Samuel James**, estimation of tannic acid, 1876, i., 113.
- Simpson, Maxwell**, bromioides, 1874, 564.
- compound of calcium iodide with silver iodide, 1880, A., 442.
- direct formation of the chlorobromides of the olefines and other unsaturated compounds, 1880, A., 456.
- action of acetic chloride on valeraldehyde, 1880, A., 459.
- Simpson, Maxwell**, and **Cornelius O'Keeffe**, determination of urea by means of sodium hypobromite, 1877, i., 538.
- Singer, Max**, bleaching of jute, 1880, A., 200.
- woody substance and lignified tissues, 1882, A., 1122.
- Singer, Sigmund**, sulphates occurring in the Bauersberg near Bisehofsheim, 1881, A., 369.
- Sinteniz, Friedrich**. See **Ernst Carl Theodor Zincke**.
- Sipőcz, Ludwig**, jordanite from Imfeld in the Binnenthal, 1874, 134.
- lievrite, 1876, i., 193.
- miargyrite and kenngottite, 1878, A., 17.
- Sipőcz, Ludwig**. See also **Gustav Tschermak**.
- Sivers, Friedrich Maximilian von**, nitrogen in turf, 1880, A., 344.
- Sjögren, Anton**, manganosite and pyrochroite from the Mossgrube, Nordmark, Wermland, 1878, A., 279.
- appearance of gadolinite, orthite, and similar minerals under the microscope, 1878, A., 387.
- baryto-calcite from Långban, 1878, A., 942.
- occurrence of berzelite and karyinite, 1878, A., 942.
- the occurrence of manganese in Nordmark, 1880, A., 15; 1881, A., 697.
- Sjögren, Sten Anders Hjalmar**, some bismuth minerals from Nordmark in Wermland, 1880, A., 14; 1881, A., 688.
- pyroxene from Nordmark in Sweden, 1881, A., 380.
- manganese calcium carbonate containing barium from Långban, 1881, A., 690.
- fredricite, a mineral resembling the fahlore from Falu, 1881, A., 998.
- Skalweit, Johan Alfred**, conversion of einchonidine into an oxy-base, 1874, 808.
- examination of petroleum, 1881, A., 650.
- quantitative estimation of nicotine in tobacco, 1882, A., 108.
- the specific gravity of nicotine and of some of its aqueous solutions, 1882, A., 216.
- action of alcohol and ether on tobacco, and the distillation of the extract thus obtained, 1882, A., 1005.
- Skey, William**, new process for the preparation of sulphuretted hydrogen as a laboratory reagent, 1873, 840.
- preparation of potassium sulphocyanate, 1873, 879.
- isolation of the bitter substance of the nut of the karaka tree, 1873, 933.
- the alkalinity or acidity of certain salts and minerals as indicated by their reaction to test paper, 1873, 1159.
- absorption of rosaniline, mauveine, etc., by siliceous substances generally, 1874, 1028.
- production of double salts of the aniline bases and indigo with metallic salts, 1874, 1169.
- alleged nuclear action of gold upon gold reduced from solution by organic matter, 1875, 133.
- production of auriferous alloys by wet processes, 1875, 241.
- formation of gold nuggets in drift, 1875, 241.
- note on the formation and constitution of torbanite, 1875, 435.
- evolution of heat on adding water to clay-slate, clay, and coal, 1875, 530.
- alleged replacement of electro-positive by electro-negative metals in a voltaic cell, 1876, ii., 266.
- electromotive order of certain metals in potassium cyanide, with reference to the use of this salt in milling gold, 1876, ii., 588.
- solubility of the alkalis in ether, 1876, ii., 602; 1877, ii., 706.
- electric and chemical deportment of argentic sulphide, 1876, ii., 605.
- absorption of antimony and arsenic from a solution of their oxides in hydrochloric acid by charecoal, 1876, ii., 607.
- oxidation of silver, platinum, and gold, and supposed oxidation of mercury by oxygen in presence of water, 1876, ii., 608.

- Skey, William**, on certain chemical effects of oxygenised graphite and platinum, 1876, ii., 609; 1877, ii., 710.  
 — evolution of antimony from stibnite by nascent hydrogen, 1877, i., 174.
- Skraup, Zdenko Hanns**, cyanogen compounds of iron, 1876, i., 377; 1877, ii., 597.  
 — potassium superferricyanide, 1878, A., 35.  
 — cinchonine, 1878, A., 157.  
 — hydro-derivatives of cinchonine, 1878, A., 434.  
 — cinchonine and cinchonidine, 1879, A., 71.  
 — oxidation products of cinchona bases, 1879, A., 656.  
 — oxidation products of quinine, 1879, A., 809.  
 — constitution of cinchonine bases, 1879, A., 810.  
 — composition of cinchonine, 1879, A., 948.  
 — oxidation products of cinchonine, 1879, A., 948.  
 — homocinchonidine, 1880, A., 270.  
 — constitution of cinchonine and cinchonidine, 1880, A., 409.  
 — synthesis of quinoline, 1881, A., 287.  
 — cinchomeronic acid, 1881, A., 290.  
 — isomerism in the pyridine and quinoline series, 1881, A., 744.  
 — synthesis of the quinoline series, 1881, A., 919; 1882, A., 1216.  
 — some compounds of quinine, 1882, A., 218.  
 — quinine and quinidine, 1882, A., 219.  
 — quinoline derivatives, 1882, A., 1111.
- Skraup, Zdenko Hanns**, and **Georg Vortmann**, cinchonidine, 1879, A., 945.
- Skraup, Zdenko Hanns**. See also *A. Schlosser*.
- Slater, Charles**. See *Matthew Monerieff Pattison Muir*.
- Slawik, T.**, electrolysis of potassium phenylacetate, 1875, 58.
- Sloan, Baylis Earle**, rock salt from Saltville, 1880, A., 95.  
 — absorption of chlorine by arsenious chloride, 1882, A., 19.  
 — analysis of felspar accompanying microlite in Amelia Co., Virginia, 1882, A., 23.
- Sloane, T. O'Conor**, notes on coal analysis, 1878, A., 448.
- Sloane, T. O'Conor**, precipitation of barium sulphate, 1882, A., 97.  
 — qualitative test for carbon bisulphide and carbonic anhydride in coal gas, 1882, A., 107.
- Slocum, Frank L.**, fruit of *Adansonia digitata*, 1880, A., 836.
- Slooten, William van**, ash of hard carbon from coal gas retorts, 1877, i., 355.  
 — air of hospitals during yellow fever, 1881, A., 1179.
- Smee, Alfred**, obituary notice of, 1877, i., 509.
- Smetham, Alfred**, composition of a boiler incrustation, 1879, A., 839.  
 — estimation of organic carbon in potable waters, 1881, A., 196.
- Smirensky, Andronnik**, diallylethylcarbinol, 1882, A., 488.
- Smit**. See *Roorda Smit*.
- Smita, Arthur**, analysis of the leonhardtite from Floitenthal, 1878, A., 713.
- Smith, Alfred John**, the bromine derivatives of  $\beta$ -naphthol, 1879, T., 789; A., 722.
- Smith, Arthur Percy**, blue flame from common salt, 1879, A., 497.
- Smith, Arthur Percy**, and **Walter Bezanat Lowe**, dissociation of chlorine, 1882, A., 794.
- Smith, Bernard Ernest**, on the preparation of diethylnaphthylamine, 1882, T., 180.  
 — on the action of sulphuric acid upon diethylnaphthylamine at high temperatures, 1882, T., 182.  
 — on the action of carbon oxydichloride (*phosgene gas*) upon diethylnaphthylamine, 1882, T., 185.
- Smith, Christopher Webb**, extraction of indigo, 1874, 1119.
- Smith, Edgar Francis**, new method for the decomposition of chromic iron, 1878, A., 683.  
 — on a dichlorosalicylic acid and a monochlorosalicylic acid, 1878, A., 879.  
 — electrolytic estimation of cadmium, 1879, A., 276 746.  
 — a new base, 1880, A., 387.  
 — electrolytic experiments, 1881, A., 3.  
 — synthesis of salicylic acid, 1881, A., 1035.
- Smith, Edgar Francis**, and **Gertrude K. Peirce**, nitration of *m*-chlorosalicylic acid, 1880, A., 392.
- Smith, Edgar Francis**. See also *Friedrich Theodor Frerichs*.
- Smith, Edward C.**, magnetite, 1880, A., 95.

- Smith, Frank**, obituary notice of, 1877, i., 511.
- Smith, Harry J.**, contributions to the knowledge of the three isomeric oxybenzoic acids, 1878, A., 71.
- Smith, Henry**. See **Thomas Smith**.
- Smith, Henry A.**, amount of arsenic in pyrites and its distribution in acid and alkali manufacture, 1873, 417.  
— the chemistry of sulphuric acid manufacture, 1873, 538.
- Smith, James Johnstone**. See **Edmund James Mills**.
- Smith, John Lawrence**, preparation of platinum black, 1873, 141.  
— on a mass of meteoric iron from Cape Colony, 1873, 610.  
— conversion of alkaline sulphates into carbonates, tartrates, etc. in the moist way, 1873, 1003.  
— the corundum of North Carolina, Georgia, and Montana, and the minerals accompanying it, 1873, 1204.  
— observations on the structure of meteoric iron, 1874, 239.  
— process for obtaining crystals of phosphorus, 1874, 869.  
— meteoric iron from Howard Co., Indiana, 1874, 967.  
— warwickite, 1875, 46.  
— association of garnet, idocrase, and datolite, 1875, 136.  
— preparation of pure sodium carbonate, and of nearly pure potassium carbonate, 1875, 337.  
— absolute alcohol, 1875, 342.  
— ready method of showing the absorption of hydrogen by palladium, 1875, 424.  
— magnetic anomaly of ferric oxide prepared from meteoric iron, 1875, 426.  
— analytical notes, 1875, 480.  
— fall of two meteoric stones in the United States, 1875, 1167.  
— meteoric iron, 1875, 1243; 1876, i., 352.  
— troïlite: its true mineralogical and chemical position, 1876, i., 536.  
— a crystallised sulph-hydrocarbon found in the interior of a mass of meteoric iron, 1876, i., 537.  
— description of the Nash County meteorite which fell in May, 1874, 1876, i., 692.  
— the solid carbon compounds in meteorites, 1876, ii., 392, 614, 615; 1877, i., 288.  
— aragonite found on the surface of a meteorite, 1876, ii., 493.  
— note on a meteorite which fell on March 25, 1865, at Wisconsin, and is identical in character with the meteorite of Meno, 1876, ii., 615.  
— gas-wells in Pennsylvania, 1877, i., 287.  
— examination of American niobates or columbates, 1877, ii., 576, 714.  
— meteorites, 1878, A., 121.  
— tantalite from Coosa Co., Alabama, 1878, A., 652.  
— a new earth of the cerium group and on the analysis of natural niobates, 1879, A., 12.  
— the supposed new element mosandrum, 1879, A., 12.  
— daubréelite, the new meteoric mineral, 1879, A., 33.  
— remarkable specimen of silicon-iron, 1879, A., 204.  
— crystals extracted from cast iron by ether or petroleum, 1879, A., 771.  
— the native iron of Greenland and the dolerite which encloses it, 1879, A., 892.  
— a new meteoric mineral, peckhamite, 1881, A., 29.  
— the Emmet County meteorite, 1881, A., 395.  
— the meteorite which fell at Estherville, U.S.A., 1881, A., 561.  
— anomalous magnetism of the meteoric iron at Sainte-Catherine, 1881, A., 704.  
— nodules of chromite in meteoric iron from Cohahuila, 1881, A., 705.  
— danburite from Russell, St. Laurent Co., N.Y.; triphane from N. Carolina; fergusonite from Burke Co., N. Carolina, 1882, A., 151.  
— estimation of phosphorus in iron, 1882, A., 897.
- Smith, John Lawrence**, and **Paul Emile Lecoq de Boisbaudran**, spectrum of didymium nitrate, 1879, A., 861.
- Smith, Robert Angus**, absorption of gases by charcoal: on a new series of equivalents or molecular numbers, 1879, A., 500.  
— detection of fire damp, 1879, A., 991.  
— measurement of the actinism of the sun's rays and of daylight, 1880, A., 685; 1881, A., 955.  
— report on the treatment of sewage, 1880, A., 767.
- Smith, Robert Frazer**, notes on animal charcoal, 1875, 299, 300; 1876, i., 974.  
— zinc-blende from an antimony mine, 1875, 433.
- Smith, Thomas**, and **Henry Smith**, meconoisin, a new derivative from opium, 1878, A., 801.  
— — guo copine, 1878, A., 987.



- Smith, *Watson*, note on the occurrence of benzene in rosin light oils, 1876, i., 29.
- a new method for preparing the hydrocarbons, "diphenyl" and "isodinaphthyl," and on the action, at a high temperature, of metallic chlorides upon certain hydrocarbons, 1876, ii., 30.
- a convenient method of obtaining condensed hydrocarbons, 1876, ii., 393.
- action of solutions of alkaline oxalates on the earthy carbonates and of solutions of alkaline carbonates on the earthy oxalates, 1877, ii., 245.
- on the action, at a high temperature, of volatile metallic chlorides on certain hydrocarbons, 1877, ii., 551.
- the isomeric dinaphthyls, 1879, T., 224.
- preliminary note on certain compounds of naphthalene and benzene with antimony trichloride, etc., 1879, T., 309.
- vapour densities of the three isomeric dinaphthyls, 1879, A., 537.
- characteristic colour reactions produced by the action of antimony or bismuth trichloride on the aromatic hydrocarbons, 1879, A., 531.
- extinguishing fires in tar distilleries, 1879, A., 1080.
- analyses of the ash of the wood of two varieties of the eucalyptus, 1880, T., 416.
- note on an improved form of oven for heating sealed tubes, and avoiding risks of explosions, 1880, T., 490.
- note on a convenient form of lead bath for Victor Meyer's apparatus for determining the vapour densities of high boiling substances, together with a few slight modifications, 1880, T., 491.
- synthesis of phenylnaphthalene, 1880, A., 125, 261.
- certain volatile products in crude coal tar benzenes, 1881, A., 1128.
- Smith, *Watson*, and *George William Davis*, on pyrene, 1880, T., 413.
- crystalline molecular compounds of naphthalene and benzene with antimony trichloride, 1882, T., 411.
- an additional evidence, by analysis of the quinoline molecule, that this base belongs to the aromatic series of organic compounds, 1882, T., 412.
- Smith, *Watson*, and *William Train Liddle*, nature of the insoluble form of soda existing in the residue left on causticising sodium carbonate solutions with lime, 1881, A., 508.
- Smith, *Watson*, and *Toyokichi Takamatsu*, on pentathionic acid, 1880, T., 592; 1882, T., 162.
- on phenylnaphthalene, 1881, T., 546.
- sulphonic acids derived from isodinaphthyl ( $\beta\beta$ -dinaphthyl), 1881, T., 551.
- Smith, *William*, obituary notice of, 1876, i., 622.
- Smolensky, *P.*, on the amount of carbon dioxide in ground air, 1878, A., 555.
- Smorawsky, *St.*, fusion of rhamnetin with potash, 1880, A., 53.
- Smyth, *George A.*, action of sulphuric acid on substituted anilines, 1875, 164.
- Snelus, *George James*, analysis of refractory materials, 1878, A., 921.
- Snijders, *Aarnout Johannes Cornelis*, chemical action of water and saline solutions on zinc, 1878, A., 838; 1879, A., 11.
- Sobrero, *Ascario*, manufacture of dynamite, 1876, ii., 680.
- Sodini, *G.*, preparation of iodic acid, 1877, i., 271.
- influence of water on the action of chlorine on iodine, 1877, ii., 276.
- Söllscher, *C.*, homologues of deoxybenzoin and benzophenone, 1882, A., 1292.
- Sohneke, *Leonhard*, etched figures on cubes of rock salt, and some remarks upon F. Exner's method for the production of figures by solution, 1876, ii., 273.
- Sokoloff, *Nicolai N.*, glyceric anhydride, 1878, A., 569.
- Sokoloff, *Nicolai N.*, and *Paul A. Latschinoff*, action of ammonia on acetone, 1875, 353.
- Sokoloff, *Nicolai W.*, estimation of hydrocyanic acid in the dead body, 1877, ii., 365.
- estimation of copine, 1877, ii., 368.
- note on the estimation of mineral poisons, 1878, A., 92.
- preparation of nitromannitol and the conditions of its explosion, 1879, A., 777.
- explosion of nitromannitol, 1879, A., 1080.
- a new eudiometer, 1882, A., 551.
- a new apparatus for gas analysis, 1882, A., 1229.
- Sokoloff, *Nil*, a contribution to the knowledge of the liver secretion, 1876, i., 406.
- human bile, 1876, ii., 107.

- Sokolowski, *A.* See *Bronislaw Radziszewski*.
- Sokolowski, *N.*, action of bromine on acetone, 1877, i., 453.
- Soldaini, *Arturo*, method of preparing ferric and cupric oxides from the sulphates, so as not to obtain basic sulphates, 1877, i., 283.
- a new reagent for the detection and estimation of glucose, 1877, i., 345.
- Solvay, *Ernst*, preparation of chlorine and hydrochloric acid, 1879, A., 8; 1882, A., 278.
- Sommaruga, *Erwin (Freiherr) von*, action of ammonia on isatin, 1878, A., 507, 798; 1879, A., 63; 1881, A., 434.
- vapour density of indigo, 1879, A., 63, 532.
- action of ammonia on quinones, 1879, A., 718.
- Sommerkorn, *H.*, new method of taking the specific gravity of liquids, 1880, A., 419, 743.
- Sonnenschein, *Franz Leopold*, a new test for blood, 1874, 296.
- conversion of strychnine into brucine, 1875, 771.
- Sonnenschein, *Franz Leopold*, and *Charles A. Robbins*, some constituents of *Gelsemium sempervirens*, 1877, i., 97.
- Sonntag, *Ed.*, von *Schönberg*, and *H. Lorenz*, feeding experiments with sheep, 1879, A., 951.
- Sonstadt, *Edward*, note on the compound of starch with iodine, 1874, 352.
- antiseptic properties of calcium iodate, 1874, 394.
- separation of calcium from magnesium, 1874, 915.
- an experiment on sea water, 1874, 1006.
- Sorauer, *Paul Carl Moritz*, preservation of fruit in winter, 1881, A., 132.
- manuring experiments on fruit trees, 1881, A., 936.
- studies on evaporation, 1881, A., 1059.
- investigations as to the quantity of water necessary for cereals, 1882, A., 1312.
- Sorby, *Henry Clifton*, on comparative vegetable chromatology, 1874, 279.
- on the determination of the index of refraction of liquids by means of the microscope, 1878, T., 487.
- Sorby, *Henry Clifton*. See also *William Richard Eaton Hodgkinson*.
- Soret, *Charles*, influence of temperature on the distribution of salts in solution, 1881, A., 5.
- Soret, *J. Louis*, recherches on the absorption of the ultra-violet rays by various substances, 1878, A., 629.
- absorption spectra of some metals of the yttrium and cerium groups, 1878, A., 629; 1880, A., 7; 1881, A., 349.
- fluorescence of the salts of the earth metals, 1879, A., 862.
- Soret, *J. Louis*, and *Albert A. Rilliet*, ultra-violet absorption spectra of ethereal salts of nitric and nitrous acids, 1880, A., 202.
- Sorokin, *Basilius I.*, synthesis of diallylmethylcarbinol, 1877, ii., 299.
- oxidation of diallyl, 1878, A., 962.
- constitution of diallyl, 1880, A., 370.
- formation of  $\beta$ -methoxyglutaric acid from diallylmethylcarbinol, 1880, A., 383; 1881, A., 414.
- Sorokin, *Basilius I.*, and *Alexander M. Saytzeff*, synthesis of a non-saturated tertiary alcohol of the series  $C_nH_{2n-3}OH$ , 1876, i., 695.
- Sotnischewsky, glycerolphosphoric acid in normal human urine, 1881, A., 631.
- Soubeiran, *Jean Léon*, *Thapsia garganica*, 1881, A., 181.
- Suchay, *August*, solubility of silica in aqueous ammonia, 1873, 473.
- Southby, *E. R.*, examination of the effect of hard and soft water on the brewing of beer, 1880, A., 593.
- Southworth, *Mase Shepard*, researches on the isomeric cresols and their occurrence in coal tar, 1874, 61.
- Southworth, *Mase Shepard*. See also *Ira Remsen*.
- Southworth, *Richmond J.*, relation of the volumes of solutions of hydrated salts to their water of composition, 1880, A., 212.
- Souza, *Ennes de*, on amalgams, 1876, i., 522; ii., 383.
- Soxhlet, *Franz*, contributions to the physiological chemistry of milk, 1873, 187.
- milk globules and a new theory of churning, 1876, ii., 537.
- reduction of alkaline copper solutions by saccharine bodies, 1878, A., 686.
- preparation of permanent rennet essence, 1878, A., 826.
- estimation of fat in milk, 1879, A., 1068; 1881, A., 656.

- Soxhlet, Franz**, behaviour of various sugars with alkaline copper and mercury solutions, 1880, A., 758.
- supposed conversion of starch into sugar by water at a high temperature, 1882, A., 30.
- researches on the formation of fat in animals, 1882, A., 238.
- value of pondrette, 1882, A., 651.
- areometric estimation of fat in skim milk, 1882, A., 1138.
- preparation of pure starch sugar, 1882, A., 1274.
- Soxhlet, Franz** (and others), behaviour of various sugars to Fehling's solution, 1880, A., 66; 1881, A., 887.
- Soxhlet, Franz**. See also *Jul. (Ritter) von Moser, Paul Petersen*.
- Soyka, Isidor**, relation of acid albumin to alkali albuminate, 1876, ii., 316.
- influence of soils on the decomposition of organic substances, 1879, A., 339.
- rapidity of germ diffusion in the air, 1880, A., 515.
- mode of optically demonstrating the permeability of a soil for air, 1882, A., 89.
- Späth, Johann Ludwig**, and **Meyer**, influence of coal gas on the growth of trees, 1874, 86.
- Speciale, Sebastiano**, the lavas of the volcanos of Erniei in the Valle del Sacco (Rome), 1880, A., 226.
- Speciale, Sebastiano**. See also *Robert Schiff, Leonardo Ricciardi*.
- Speck, Carl**, the influence of food upon the assimilation of oxygen and excretion of carbon dioxide, 1876, i., 723.
- Speer**, relation of the grasses of meadows and pastures, 1880, A., 498.
- Spence, Peter**, and **Alexander Esilman**, on the detection and estimation of free mineral acids in various commercial products, 1878, T., 298.
- Spezia, Giorgio**, the colour of zircon, 1877, ii., 856.
- Spica, Giovanni**, a polymeride of toluquinone, 1882, A., 1065.
- Spica, Giovanni**. See also *Francesco Canzoneri*.
- Spica, Pietro**, action of cyanogen chloride on cumic alcohol, 1876, i., 582.
- *p*-toluamide, 1876, i., 600.
- selenuric acid and method of estimating the selenium in them, 1877, ii., 189.
- propylphenols and other derivatives of propylbenzene, 1879, A., 631.
- *Satureia Juliana*, 1880, A.; 128.
- Spica, Pietro**, cumenesulphonic acids and a new cumol, 1880, A., 166.
- amines corresponding with  $\alpha$ -toluic alcohol, 1880, A., 241.
- process for simultaneously detecting nitrogen, sulphur, and chlorine in organic compounds, 1880, A., 348.
- cumophenols, 1880, A., 882.
- thymolglycollic acids, 1880, A., 888.
- cumenesulphonic acids, 1880, A., 890; 1881, A., 602.
- action of nascent hydrogen on nitriles, 1881, A., 262.
- some alkaloids found in the animal organism during life, 1881, A., 294.
- supposed reagent for distinguishing ptomaines from vegetable alkaloids, 1882, A., 430.
- Spica, Pietro**. See also *C. Colombo, Emanuele Paternò*.
- Spiegel, Adolf**, vulpic acid, 1881, A., 97, 173, 1036; 1882, A., 1076.
- synthesis of tropic acid from acetophenone, 1881, A., 277.
- synthesis of atrolactic acid from acetophenone, 1882, A., 520.
- Spiegelberg, Ludwig**, nitro-, amido-, and bromo-benzenesulphonic acids, 1879, A., 796.
- Spiegelberg, Ludwig**. See also *Gustav Heinzelmann*.
- Spieß, Gustav**. See *Ednard Hepp*.
- Spiller, John**, on new sources of ethyl- and methyl-anilines, 1873, 759.
- on the occurrence of native calcium chloride at Guy's Cliffe, Warwickshire, 1876, i., 154.
- identification of coal tar colours, 1881, A., 659.
- Spirgatis, Johann Julius Hermann**, identity of the so-called "unripe amber" with krantzite, 1873, 483.
- Spiro, Petr A.**, formation of bile, 1882, A., 878.
- Spitzer, Fr. V.**, eterpene (ethyl terpene), 1877, ii., 789.
- camphor dichloride, 1878, A., 586; 1879, A., 168.
- camphene from camphor, and its homologues, 1879, A., 168.
- camphor chlorides, 1880, A., 717.
- Spitzer, Fr. V.** See also *J. Kachler, Victor Meyer*.
- Sprengel, Hermann Johann Philipp**, air-bath of constant temperature between 100° and 200° C., 1873, 458.
- a method of determining the specific gravity of liquids with ease and great rapidity, 1873, 577.

- Sprengel, Hermann Johann Philipp**, on a new class of explosives which are non-explosive during their manufacture, storage, and transport, 1873, 796.
- Sprenger, Paul Franz Maximilian**, phosphotungstic acid, 1881, A., 140.
- Spring, Walther**, the polythionic acids, 1874, 123; 1875, 129.
- on the specific heat of bodies, 1875, 997.
- on the behaviour of potassium chlorite to phosphorus oxychloride, 1875, 1000.
- on the expansion and specific heat of fusible alloys, 1876, ii., 592.
- new basic salts of mercuric sulphide, 1880, A., 157.
- non-existence of pentathionic acid, 1880, A., 215, 367; 1882, A., 1262.
- researches on the welding of solid bodies induced by pressure, 1881, A., 498; 1882, A., 273.
- formation of acetone and thiace-tone, 1881, A., 711.
- formation of alloys by pressure, 1882, A., 921.
- expansion of the alums, 1882, A., 1020.
- Spring, Walther, and Camille Winsinger**, action of chlorine on sulphonic derivatives, 1882, A., 938.
- Springer, Alfred**, ethyl glycocholate, 1881, A., 1160.
- Springmühl, Ferdinand**, use of aniline colours dissolved in collodion, 1873, 207.
- the poison contents of aniline colours, 1873, 207.
- anthracene-blue, 1873, 308, 422.
- impurities and adulterations of aniline-green, 1874, 611, 720.
- impurities and adulterations of aniline-violet, 1874, 612.
- impurities and adulterations of aniline-blue, 1874, 834.
- impurities and adulterations of aniline-yellow and -orange, 1874, 835.
- Springmühl, Ferdinand**. See also *Oskar Emil Meyer*.
- Spruck, Ludwig**. See *Adolph Claus*.
- Squibb, Edward R.**, note on litmus paper, 1873, 196.
- note on chloral, 1873, 284.
- opium assay, 1882, A., 656.
- Staats, Georg**, *o*- and *p*-toluidine derivatives, 1880, A., 386.
- Stackmann, Wilhelm**. See *Oskar Gustav Doebner*.
- Staedel, Wilhelm**, formation and decomposition of ketones, 1873, 753.
- Staedel, Wilhelm**, decomposition of ketones by heat, 1873, 751.
- reduction of benzophenone, 1874, 261; 1875, 1191.
- tetraphenylethane and tetraphenylethene, 1876, ii., 297.
- ketones of the aromatic series, 1878, A., 419, 671.
- regularities in the boiling points of chlorinated ethanes, 1878, A., 652.
- halogen derivatives of ethane and ethylene, 1879, A., 212, 368.
- racemic acid, 1879, A., 223.
- benzophenone, 1879, A., 318.
- vapour tension of the halogen derivatives of ethane, 1880, A., 618.
- apparatus for the collection of nitrogen in elementary analysis, 1881, A., 192.
- Staedel, Wilhelm, and Carl Beck**, dioxydiphenylmethane, 1878, A., 420; 1879, A., 324.
- Staedel, Wilhelm, and Gust. Damm**, bromonitro- and bromamido-anisols, 1879, A., 239; 1880, A., 641.
- Staedel, Wilhelm, and Fr. Gail**, oxidation of dioxydiphenylmethane, 1879, A., 325.
- Staedel, Wilhelm, and E. Hahn**, apparatus for regulating the atmospheric pressure in boiling point determinations, 1879, A., 346.
- Staedel, Wilhelm, and Fr. Kleinschmidt**, *iso*-indole, 1879, A., 252; 1880, A., 659.
- Staedel, Wilhelm, and H. Praetorius**, nitration of benzophenone, benzhydrol, and diphenylmethane, 1878, A., 420; 1879, A., 319.
- Staedel, Wilhelm, and Leopold Rügheimer**, action of ammonia on chloracetylbenzene, 1876, ii., 297, 407; 1877, i., 159.
- Staedel, Wilhelm, and Ewald Sauer**, dinitrobenzophenone, 1879, A., 212.
- dioxybenzophenone, 1880, A., 646.
- Staedel, Wilhelm, and Otto Siepermann**, new synthesis of organic bases containing oxygen, 1880, A., 639; 1881, A., 722.
- Staedel, Wilhelm** (and others), action of nitric acid on some phenol ethers, 1881, A., 723.
- Stahel** (and others), cultivation of soja bean, 1882, A., 549.
- Stahlschmidt, Johann Karl Fr.**, composition of the liquors obtained by the oxidation and lixiviation of soda waste in the recovery of sulphur therefrom, 1873, 197.



- Stahlschmidt, Johann Karl Fr.**, chemical constitution of bleaching powder, 1876, ii., 604; 1877, i., 279.  
 — polyporic acid, 1877, ii., 620; 1879, A., 382.
- Stahre, Nils Ludvig.** See *Johann Georg Noël Dragendorff*.
- Stallo, Helena.** See *Frank Wigglesworth Clarke*.
- Stamm, A.**, estimation of aniline colouring matters by means of sodium hyposulphite, 1873, 1263.
- Stamm, L.**, the application of nitro-alizarin to steam dyeing, 1877, ii., 950.
- Stammer, Karl**, determination of the matter absorbed by animal charcoal in refining sugar, 1873, 1061.  
 — valuation of raw sugar, 1880, A., 114, 520.
- Stanford, Edward Charles Cortis**, on the action of charcoal on organic nitrogen, 1873, 14.  
 — on Iona pebbles, 1873, 19.  
 — on the action of earth on organic nitrogen, 1874, 938  
 — manufacture of iodine, 1878, A., 169.
- Stansell, Lionel.** See *Charles Henry Piesse*.
- Staples, Benjamin Charles**, obituary notice of, 1873, 782.
- Stas, Jean Servais**, silver chloride and bromide, 1875, 1161.
- Stas, Jean Servais.** See also *O. J. Broch*.
- Staubesand**, manuring experiments on moorland, 1880, A., 923.
- Staufer, Bernhard.** See *Friedrich Krafft*.
- Staveley, William W.**, a pure coke, 1881, A., 857.
- Stead, John Edward**, phosphorus in Cleveland ironstone and in iron, 1879, A., 90.
- Stead, John Edward.** See also *John Pattinson*.
- Stearn, Charles H.**, and *G. H. Lee*, the effect of pressure on the character of the spectra of gases, 1873, 996.
- Stebbins, James H.**, some azo-derivatives, 1880, A., 389, 715; 1881, A., 41.  
 — action of benzotrichloride on primary amines, 1880, A., 880.  
 — colouring matters produced by the action of diazo-compounds on phenols, 1880, A., 880.  
 — action of nitrosodimethylaniline hydrochloride on the phenolsulphonic acids which do not contain the methyl group, 1881, A., 161.
- Stebbins, James H.**, action of diazo-compounds on  $\alpha$ -thymolsulphonic acid, 1882, A., 834.
- Stebler, F. G.**, influence of light on the germination of seeds, 1881, A., 1061.
- Stecher**, thirty-eighth year of a farm without stable manure, 1880, A., 741.
- Steenbuch, Chr.**, microscopical examination of flour: a method for the easy separation of tissue substances, 1882, A., 559.
- Steenstrup, Knud Johan Vogel**, the Nordenskiöld iron-mass and the occurrence of native iron in basalt, 1877, ii., 578.
- Stefan, Josef**, experiments on evaporation, 1874, 529.  
 — experiments on apparent adhesion, 1874, 1055.  
 — on the laws of magnetic and electric forces in magnetic and dielectric media, and their relation to the theory of light, 1875, 995.  
 — researches on the conduction of heat in gases, 1876, ii., 37.  
 — diffusion of carbonic anhydride through water and alcohol, 1879, A., 347.  
 — diffusion of liquids, 1880, A., 364.
- Stefanelli, Pietro**, the amount of nitrogen in worm-eaten fruit, 1876, i., 421.
- Steffens, F. W.**, recovery of sugar from molasses, 1879, A., 844.
- Steger, Th.**, hemoglobin, 1875, 775.
- Steiger, Edward.** See *Frederick Pearson Treadwell*.
- Stein, Gottlieb**, analysis of Turkey-red oil, 1879, A., 984.  
 — the acid of *Drosera intermedia*, 1880, A., 36.  
 — application of alizarin in dyeing and calico printing, 1882, A., 1251.
- Stein, Heinrich Wilhelm**, molecular colours of the metals, 1873, 342.  
 — action of non-combustible gases in putting out flames, 1874, 929.  
 — on the spectral analysis of coloured liquids, glasses, and vapours, 1875, 412.  
 — ultramarine, 1877, i., 686.
- Stein, Siegfried**, construction of scientific instruments of rock crystal, 1877, i., 682.
- Steinau, Richard**, and *Charles Steinau*, manufacture of a red pigment from iron scrap, 1879, A., 97.
- Steinberg, J.**, determination of the absolute mass of the blood, 1873, 646.
- Steiner, Anton**, a molecular compound of acetic acid, bromine, and hydrobromic acid, 1874, 566.

- Steiner, Anton**, synthesis of succinic acid, 1874, 568.  
 — dibromomethane, 1871, 782.  
 — action of bromine on the ethers of acetic acid, 1874, 886.  
 — action of bromine on methyl acetate, 1875, 129.  
 — action of aniline on fulminates, 1875, 164.  
 — action of ammonia and substituted ammonias on mercuric fulminate, 1875, 882.  
 — isomeric tribenzhydroxylamines, 1876, i., 270.  
 — action of hydrogen phosphide on chloroacetic acid, 1876, i., 373.  
 — solubility of mercuric fulminate, 1876, i., 378.  
 — action of hydrogen sulphide on mercuric fulminate, 1876, i., 378.  
 — constitution of the fulminates, 1876, ii., 288.  
 — dithiomethane, 1878, A., 597.  
 — conversion of perthiocyanic acid into potassium thiocyanate, 1882, A., 1274.  
 — products of the decomposition of ethyl nitroacetoacetate, 1882, A., 1280.  
 — action of chlorine on amides, 1882, A., 1281.
- Steiner, Anton**. See also *Carl Otakar Čech*.
- Steiner, Ignatius**, the ammoniacal copper test and its application, 1879, A., 1066.  
 — remarks on some experiments with maltose, 1881, A., 568.  
 — reducing power of beer and wort, 1882, A., 1137.
- Steiner, Ignatius**. See also *William E. Halse*, *G. Vienne*.
- Steinheil, Eduard**, composition of the food of four miners at the Silberau mine, Eins, 1878, A., 592.
- Steinkauler, Theodor**. See *Georg Lunge*.
- Steinmann, A.**, a basic copper sulphate, 1882, A., 1266.
- Steinreich, Rudolf**, potassium chloride in "osmose water," 1882, A., 115.
- Stelzner, Alfred Wilhelm**, the minerals of the granitic quartz-blocks of the Sierra de Cordoba, South America, 1874, 668.  
 — the granular limestones of the Argentine Republic, and their accessory minerals, 1874, 669.  
 — the enargite veins of the Famatina Range, 1874, 1069.  
 — the limestones and calcium phosphates of Curaçoa, 1878, A., 120.
- Stelzner, Alfred Wilhelm**, fayalite slags from the Freiberg furnaces containing zinc spinel, 1882, A., 176.
- Stelzner, Alfred Wilhelm**. See also *Theodor Erhard*, *Hans Oscar Schulze*.
- Stempnewsky, Stanislaw N.**, preparation of glycol, 1878, A., 850.  
 — *n*-ethyl sulphate, 1882, A., 487.
- Stenhouse, John**, iodo-derivatives of the orcins, 1873, 275; 1874, 585.  
 — amido-derivatives of orcin, 1873, 752.  
 — action of bromine in presence of water on bromopyrogallol and bromopyrocatechin, 1874, 586; 1875, 1.  
 — action of bromine on protocatechuic acid, 1874, 587.  
 — action of bromine on protocatechuic acid, gallic acid, and tannin, 1875, 7.  
 — obituary notice of, 1881, T., 185.
- Stenhouse, John**, and *Charles Edward Groves*, action of chlorine on pyrogallol, 1875, 704.  
 — note on incense resin, 1876, i., 175.  
 — preliminary notice on the action of sulphuric acid on naphthalene, 1876, ii., 517.  
 — dinitroso-orein and dinitro-orein, 1877, i., 544.  
 — on gardenin, 1877, i., 531; 1879, T., 688.  
 — note on ginger, 1877, i., 553.  
 — picrocellin, 1877, i., 718.  
 — contributions to the history of the naphthalene series. No. I. Nitroso- $\beta$ -naphthol, 1877, ii., 47.  
 — contributions to the history of the naphthalene series. No. II.  $\beta$ -Naphthaquinone, 1878, T., 415.  
 — contributions to the history of the orcins: betoreinol, and some of its derivatives, 1880, T., 395.  
 — note on usnic acid and some products of its decomposition, 1881, T., 234.
- Stenhouse, John**. See also *James Higgin*.
- Stephanowitz, Stephen**, preparation of mercuriophenylxanthamide, 1874, 992.
- Stern, David**. See *Frank Wigglesworth Clarke*.
- Steudemann, Hugo**. See *Siegmund Gabriel*.
- Stevenson, Alex. R.**, resins contained in jalap, 1880, A., 717.
- Stevenson, William**, preparation of iodic acid, 1878, A., 112.  
 — estimation of quinine in *ferri et quine citras*, B.P., 1879, A., 405.

- Stewart, G. Combe**, analyses of animal charcoal 1874, 920; 1876, i., 758.  
 — notes on sugar analysis, 1875, 1056.  
 — analysis of "tell-tale sugar liquor" from the safes of two vacuum sugar pans, 1876, i., 763.
- Stewart, William Auld**, obituary notice of, 1879, T., 266.
- Stierlin, R.**, sublimed molybdic acid (oxide) as an object for the polarising microscope, 1877, i., 691.
- Stillman, John Marston**, bernardinite, a resinous mineral from California, 1879, A., 603.  
 — ethereal oil from the Californian bay tree, 1880, A., 670.  
 — gum resin from Arizona and California, 1881, A., 52.
- Stillman, John Marston**, and **Edmond Charles O'Neill**, occurrence of a new fat in the nut of the Californian bay tree, 1882, A., 1186.
- Stimmel, Karl**, apparatus for skimming milk, 1881, A., 129.
- Stingl, Johann**, softening water by boiling with lime, 1873, 415.  
 — graphite, 1873, 849.  
 — condensing water containing fat for feeding boilers and its purification, 1875, 676.  
 — valuation of burned lime, 1879, A., 400.
- Stingl, Johann**, and **Theodor Morawski**, production of sulphur from sulphurous acid and hydrogen sulphide, 1879, A., 1012.
- Stingl, Johann**. See also **Theodor Morawski**.
- Stintzing, Roderich**, the carbonic anhydride of muscle, 1880, A., 330; 1882, A., 539.
- Stock, William Frederick Keating**, estimation of sulphur in coal and coke, 1875, 383.  
 — analysis of boiler feed-waters, 1879, A., 273.  
 — behaviour of copper ammonium chloride with ferrous sulphide, 1880, A., 12.
- Stock, William Frederick Keating**, and **W. Edwin Jack**, estimation of iron in clay ironstones containing pyrites, 1875, 383.  
 — estimation of iron in ores by means of stannous chloride, 1875, 783.
- Stoddard, John T.**, anhydrobenzamidotoluic acid and a new ketone base, 1878, A., 503.
- Stoddard, William Walter**, modification of Liebig's volumetric process for the estimation of phosphoric acid, 1875, 285.
- Stoddard, William Walter**, Horsley's lactometer, 1875, 293.  
 — the occurrence of celestine in Kemper-marls and its influence upon the constituents of plants, 1877, ii., 281.  
 — detection of saffron, 1878, A., 168.  
 — the logwood test for alum, 1879, A., 483.  
 — obituary notice of, 1881, T., 190.
- Stöckenius, O.**, phenylamidoacetic acid, 1879, A., 322.
- Stöckhardt, Julius Adolph**, Christiani's field experiments at Oderbruch, 1873, 87.
- Stöckl, Florian**, putrefaction products of brains, 1882, A., 77.
- Stöckmann, C.**, solution of silicates, 1877, i., 340.  
 — estimation of manganese and phosphorus in spiegeleisen, 1877, ii., 648, 800.
- Stoeder, Willem**, estimation of the alkaloids in the Bolivian cinchona barks exhibited at the horticultural exhibition in Amsterdam, 1879, A., 281.
- Stöhr, Adolf**, chlorophyll in the epidermis of foliage of phanerogams, 1880, A., 910.
- Stöver, C.**, the isomeric benzonitrilides and their behaviour towards hydrogen, 1874, 806.  
 — benzanilides and anhydrobenzoyldiamidobenzene, 1875, 271.
- Stohmann, Friedrich Carl Adolf**, proportion of phosphoric acid to nitrogen in milk, 1873, 518.  
 — a calorimetric method, 1879, A., 586.  
 — estimation of free acids in animal and vegetable fats, 1882, A., 429.
- Stoklasa, Julius**, Bohemian chalk and fossils, 1881, A., 477.  
 — studies on the decomposition of orthoclase, 1882, A., 650.
- Stokvis, Barend Joseph**, the bile-pigments and their detection by the spectroscope, 1873, 78.  
 — oxidation of bile-pigments, 1873, 288.  
 — identity of choletelin and urobilin, 1874, 993.
- Stolba, Franz**, preparation of pure sodium silicofluoride, and its use in volumetric analysis, 1873, 406.  
 — a reaction of tellurous acid, 1874, 709.  
 — preparation of pure chlorine gas, 1874, 868.

- Stolba, Franz**, reduction of selenious, telluric, and tellurous acids by grape sugar, 1874, 872.  
 — preparation of thallium from the fine-dust of sulphuric acid works, 1874, 873.  
 — optical experiment with crystals of copper sulphate, 1874, 941.  
 — copper nickel from Michelsberg, 1874, 966.  
 — aluminite from Kuehlbad, 1874, 966.  
 — dolomitic sandstones from the Silurian formations, 1874, 967.  
 — analysis of the water of the Moldau, 1874, 971.  
 — potassio-calcic chromate as an indicator in Mohr's method of chlorine estimation, 1874, 1007.  
 — behaviour of cerium salts towards hydrofluosilicic acid, 1874, 1008.  
 — platinum erneible guard, 1874, 1011.  
 — preparation of tin crystals, 1874, 1064.  
 — purification of oxalic acid, 1874, 1084.  
 — logwood as an indicator in volumetric analysis, 1876, i., 434.  
 — silicofluorides of iron and cobalt, 1877, i., 690.  
 — purification of zinc sulphate, 1877, ii., 113.  
 — alkalimetric estimation of magnesia and of phosphoric and arsenic acids, 1877, ii., 355.  
 — Hauer's method for disintegrating lepidolite, 1877, ii., 356.  
 — preparation of iron silicofluoride, 1878, A., 114.  
 — on monorubidium oxalate and its preparation from rubidium alum, 1878, A., 851.  
 — volumetric determination of cerium, 1880, A., 749.  
**Stone, Daniel**, obituary notice of, 1874, 1202.  
**Storch, Mathias Wilhelm Samuel**, examination of Danish export cheese, 1880, A., 934.  
 — formation of butter and its physical and chemical composition, 1882, A., 674.  
**Storer, Francis Humphreys**, ammonia a constant contaminant of sulphuric acid, 1876, i., 879.  
 — Schönbein's test for nitrates, 1877, ii., 219, 799.  
 — note on the ferment theory of nitrification, 1878, A., 932; 1880, A., 909.  
**Storer, Francis Humphreys**, and *J. Andreas Henshaw*, the shells of crabs, oysters, mussels, etc., as manure, 1880, A., 60.  
**Storer, Francis Humphreys**, and *David Swanson Lewis*, analysis of weeds used as salad, 1879, A., 821.  
 — seed of *Sorghum vulgare*, 1879, A., 956.  
 — analysis of shave grass, 1879, A., 956.  
 — analyses of some species of the gourd family, 1879, A., 961.  
 — calcium carbonate in water filtered through dry soil, 1880, A., 59.  
**Strakosch, Julius**, new members of the stilbene group, 1873, 890.  
 — nitro- and amido-benzylamides, 1874, 78.  
**Strasser, Hermann**, and *Gustav Theodor August Otto Schultz*, new method of preparing diphenylene and an isomeric of the same, 1882, A., 521.  
**Strasser, Hermann**. See also *Gustav Theodor August Otto Schultz*.  
**Strauss, Julius**. See *Otto Hecht*.  
**Streatfield, Frederick William**. See *Francis Robert Japp*.  
**Strecker, Karl**, specific heat of chlorine, bromine, and iodine gases, 1881, A., 784.  
**Strecker, Otto**, derivatives of itaconic, citraconic, and mesaconic acids, 1882, A., 1281.  
**Strecker, Wilhelm**. See *Eduard Lippmann*.  
**Strehl, Richard**, analyses and absorption-power of certain soils, 1874, 598.  
**Streiff, Jakob**,  $\alpha$ - and  $\beta$ -naphthylphenylamines, 1881, A., 176.  
**Streiff, Johann Jakob**, preparation of nitrous acid, 1873, 37.  
**Streintz, Franz**, decomposition of water between platinum electrodes by the discharge of a Leyden jar, 1881, A., 962.  
**Streng, Johann August**, formation of apophyllite from wollastonite, 1875, 741.  
 — the microscopical discrimination of nepheline and apatite, 1877, ii., 411.  
 — chabazite, 1878, A., 478.  
 — sulphide of iron and silver from Andreasberg, 1879, A., 440, 898.  
 — mineralogical notes on the ores of Chañarcillo, North Chili, 1880, A., 301.  
 — quartz from the Eleanor mine on the Dinstberge, near Giessen, 1881, A., 25.  
 — the phosphates of Waldgirmes, 1881, A., 525.



- Streng, Johann August**, and **Johan Hermann Kloos**, the crystalline rocks of Minnesota, 1877, ii., 580, 720.
- Streng, Johannes**. See **Ferdinand Tie-mann**.
- Stricker, G.** See **Otto Wallach**.
- Strobel, Charles**, madder-red transformed into orange, 1876, ii., 233.
- Strohl, A.**, detection of mineral acids in vinegar, 1875, 188; 1877, i., 752.  
— the estimation of small quantities of glucose in urine, 1876, i., 111.
- Strohmer, Friedrich**, the working-up of uranium residues from phosphoric acid determinations, 1878, A., 114.  
— constant ratio between the ash and the non-sugar ingredients of sugars, 1878, A., 624.  
— occurrence of ellagic acid in pine bark, 1882, A., 82.
- Strohmer, Friedrich**, and **A. Klauss**, estimation of dextrose with special reference to Sachsse's method, 1878, A., 246.
- Stromeyer, August**. See **Hans Hübner**.
- Strüver, Giovanni**, the crystalline form of some derivatives of santonin, 1877, i., 472.  
— gastaldite (a new mineral), 1877, ii., 119.  
— polysynthetical twin-crystals of oriental spinel, 1880, A., 14.  
— perowskite of Val Malenco, 1881, A., 1002.
- Struve, Heinrich von**, experiments in the domain of forensic chemistry.  
1. Detection of prussic acid, 1873, 1168.  
— action of zinc on blood solution, 1874, 174.  
— researches in the domain of forensic chemistry. No. II. Experiments on some alkaloids, 1874, 293.  
— history of fermentation, 1875, 284.  
— gas in fruits, 1876, ii., 113.  
— on the existence in the animal organism of a new substance exhibiting the absorption spectrum of blood, 1876, ii., 318.  
— Wickersheimer's preservative fluid, 1881, A., 126.  
— blood crystals, 1881, A., 751.  
— diagnosis of blood stains by measurement of the blood corpuscles, 1882, A., 342.
- Struve, Oscar**. See **Albert Ladenburg**.
- Struve, Reinhard**, derivatives of phenanthrene, 1877, ii., 902.
- Stscherbakoff, Alexei I.**, formation of a secondary alcohol, 1881, A., 401.
- Stuart, E. B.**, influence of morphine on the formation of hercynite, 1882, A., 1005.
- Stuckenberg, K.**, benzoyl compounds of *o-p*-amidophenol, 1877, ii., 193.  
—  $\alpha$ -amidonitrophenol, 1877, ii., 474.  
—  $\beta$ -diamidophenol and its derivatives, 1877, ii., 475.  
— *p*-nitro-*o*-sulphophenol, 1877, ii., 888.
- Studdert, Lancelot**, an estimation of the free and albuminoid ammonia yielded by the stagnant waters of the Dublin streets, as compared with the quantities of those substances obtained from the Liffey water after receiving the sewage, 1876, ii., 326.
- Studer, Arthur**, butylation of aniline, 1881, A., 898; 1882, A., 176.
- Studer, Bernhard**, the porphyry of Lake Lugano, 1876, i., 535.
- Stüber, Otto**. See **Victor Meyer**.
- Stünkel, Carl**, daphnetin, 1879, A., 469.
- Stünkel, Carl, Paul Wagner**, and **Th. Wetzke**, estimation of phosphoric acid by the molybdic method, 1882, A., 1318.
- Stünkel, Carl**. See also **Paul Ehrhardt Jannasch, Paul Wagner**.
- Stürtz, B.**, phosphorescence, 1880, A., 598.
- Stüsser, Th.** See **Adolph Claus**.
- Stumpf, M.**, influence of steaming on starch, 1880, A., 834.
- Stumpf, Martin**, isomeric sulpho- and oxy-naphthoic acids, 1878, A., 74.
- Sturm, H.** See **Max von Lill**.
- Stutzer, Albert**, the woody fibre of the Gramineae, 1875, 1045; 1876, i., 421.  
— the metamorphoses of the groups  $\text{COOH}$ ,  $\text{CHOH}$ ,  $\text{CH}_2$ , and  $\text{CH}_3$ , in the living plant, 1877, i., 223.  
— action of carbonic oxide on plants, 1877, i., 334.  
— on relations between the chemical constitution of certain organic compounds and their physiological importance to plants, 1878, A., 145.  
— protein compounds, 1880, A., 676.  
— action of acid gastric juice on the nitrogenous constituents of fodder, 1881, A., 296.  
— quantitative estimation and separation of protein matter in plants, 1881, A., 660.  
— manuring vines, 1882, A., 889.  
— the digestibility and quantitative estimation of albuminoids, 1882, A., 1239.

- Šubic, *Simon*, on temperature constants, 1873, 241.
- Suchy, *John*, condensation of unfermented must in a vacuum, 1882, A., 672.
- Süssenguth, *Otto*, preparation of ether, 1874, 610.
- Suguira, *Shigetake*, decomposition of ultramarine by carbonic acid, 1878, A., 834.
- Suguira, *Shigetake*, and *Harry Baker*, note on the magnesium vanadates, 1879, T., 713.
- Suguira, *Shigetake*, and *Charles Frederick Cross*, on the formation of barium periodate, 1879, T., 118.
- Suguira, *Shigetake*, and *Matthew Moncrieff Pattison Muir*, on essential oil of sage, 1878, T., 292.
- Suguira, *Shigetake*. See also *Charles Frederick Cross*, *Matthew Moncrieff Pattison Muir*.
- Suida, *Wilhelm*, isatin and its derivatives, 1878, A., 586; 1879, A., 937.
- action of oxalic acid on carbazole, 1880, A., 245.
- action of mercuric ethide on iodides, 1882, A., 409.
- Suida, *Wilhelm*, and *Samuel Plohn*, *o*-ethylphenol, 1881, A., 268.
- Suida, *Wilhelm*. See also *Julius Mauthner*.
- Suillot, *H.*, nitric oxide as a disinfectant, 1881, A., 664.
- Sundvik, *Ernst Edvard*, specific rotation of maltose, 1882, A., 707.
- Suter-Naef, kummiss, 1873, 76.
- Sutton, *Henry*, new electrical storage battery, 1882, A., 258.
- Svedmark, *Lennart Eugène*, microscopical examination of the malite porphyry of Vaksala, 1877, ii., 579.
- garnet in a Cambrian clay slate from Lemningstorp, Kirchspiel, Motala, Ostgothland, 1878, A., 386.
- Swarts, *Théodore*, bromine derivatives of camphor, 1882, A., 1300.
- isomerism of dibromocamphor, 1882, A., 1300.
- Święcicki, *Heliodor von*, formation of pepsin by Batrachians, 1877, i., 100.
- Symons, *Rudolph*, and *Ernst Carl Theodor Zincke*, diphenylacetic acid and benzoic acid, 1874, 162.
- Symons, *William*, new method for the electrochemical manipulation of oils and other non-conducting substances, 1875, 328.
- Szpilman, *Józef*, effect of gases on the splenic fever bacilla, 1882, A., 417.
- Szymanski, *F.* See *Heinrich August Bernthsen*.

## T.

- Tacchini, *Pietro*, magnesium in the sun, 1876, ii., 588.
- presence of iron in the dust showers of Sicily and Italy, 1879, A., 515; 1880, A., 709.
- Takács, *Andreas*, oxidation in the organism, 1879, A., 814.
- Takamatsu, *Toyokichi*. See *Watson Smith*.
- Tamm, *Adolf*, gases from Bessemer converters, 1880, A., 769.
- Tamm, *Hugo*. See *Anthony Guyard*.
- Tanatar, *Simcon M.*, maleic acid from dichloroacetic acid, 1880, A., 35.
- maleic and malic acids from  $\alpha$ -dibromopropionic acid, 1880, A., 371.
- preparation of pure dioxyfumaric acid, 1880, A., 383.
- trioxymaleic acid, 1880, A., 875.
- preparation of sodium ferrocyanide, 1881, A., 143.
- Tanatar, *Simcon M.* See also *Alexander A. Werigo*.
- Tanisch, *H.*, *p*-tolylphenylacetic acid, 1877, ii., 618.
- Tanner, *Henry*, some of the conditions influencing the quality of barley for malting and feeding purposes, 1882, A., 888.
- Tanner, *John A.*, examination for indium of smithsonite from south-western Virginia and east Tennessee, 1874, 1144.
- analysis of crystallised oxalate of ammonia from Guanapi guano, 1876, i., 775.
- Tanneveau, method of extracting and purifying sugar, 1877, ii., 241.
- Tanret, *Charles*, on a mode of decomposition of chloral hydrate, 1875, 56, 351.
- ergotinine, 1876, i., 405; 1878, A., 81, 679.
- hydrate of ether, 1878, A., 565.
- pelletierine, 1878, A., 739; 1879, A., 170.
- alkaloids of the pomegranate, 1879, A., 657; 1880, A., 481.
- ferrous sacrocarbonate, 1881, A., 157.
- waldwin, 1881, A., 441.
- peptones and alkaloids, 1881, A., 832; 1882, A., 876.
- Tanret, *Charles*, and *Antoine Villiers*, a saccharine matter obtained from the leaves of the walnut, 1877, ii., 301.

- Tanret, Charles, and Antoine Villiers.** identity of muscular inosite and vegetable sugars of the same composition, 1878, A., 399.  
 — inosite, 1881, A., 1022.
- Tappeiner, Anton Josef Franz Hermann,** cholic acid, 1874, 256.  
 — oxidation of cholic acid by potassium dichromate and sulphuric acid, 1877, i., 213; 1879, A., 388; 1880, A., 55.  
 — formation of phenol, indole, and scatole in the intestines of *Herbivora*, 1882, A., 240.  
 — intestinal gases of *Herbivora*, 1882, A., 240.  
 — absorption in the stomach, 1882, A., 748.  
 — digestion of cellulose, 1882, A., 985.
- Tarchan Maurawoff, (Prince) Jean de,** the formation of bile pigment in the animal body from blood pigment, 1874, 996.  
 — bile pigments, 1875, 95.
- Tassinari, Gabriele,** derivatives of arachidic acid, 1879, A., 307.  
 — acetyl- $\alpha$ -naphthol, 1881, A., 280.
- Tassinari, Gabriele.** See also **Robert Schiff.**
- Tatarinoff, Paul,** action of cyanamide on dimethylamine hydrochloride, 1880, A., 233.
- Tatarinoff, W.** See **Jos. Dépierre.**
- Tatlock, Robert R.,** nitric nitrogen in guano, 1880, A., 68.
- Tattersall, J.,** new test for papaverine, 1879, A., 1067.  
 — tests for alkaloids, 1880, A., 763.
- Taubert, Aug.,** reactions of acrolein hydrochloride, 1877, i., 295.
- Tauchert.** See **Carl Theodor Liebermann.**
- Tawildaroff, Nikolai I.,** action of aldehyde on acetamide, 1873, 58.  
 — acediamine, 1873, 59.  
 — methylguanidine, 1873, 75.  
 — brominated substitution products of ethene, 1874, 318.  
 — action of phosphorus pentabromide on aldehyde, 1874, 789.  
 — action of acetyl bromide on aldehyde, 1874, 1080.  
 — some reactions of acrolein and glycerol, 1880, A., 235.  
 — action of chlorine and bromine on ethylidene chloride and ethyl bromide, 1881, A., 398.
- Taylor, Arthur J.,** on nitro- and amidophenylsuccinimides and tolylsuccinimide, 1876, i., 602.
- Taylor, Robert Lloyd.** See **Francis Jones.**
- Taylor, T.,** detection of foreign fats in butter, 1882, A., 1003.
- Tchech.** See **Cech.**
- Tcherniac, Joseph,** substitution in fatty nitro-compounds, 1874, 1151.  
 — tertiary nitrobutane, 1875, 50; 1876, i., 902.  
 — methylnitrolic acid, 1875, 560; 1876, i., 903.  
 — preliminary notice on dichloroethylamine, 1876, i., 576.  
 — monobromonitro-compounds and the bromo-products of nitromethane, 1876, i., 901.  
 — action of bleaching powder on amines, 1876, i., 913.  
 —  $\text{NC}_2\text{H}_5\text{Br}_2$  regarded as cyanate of ethyl, the oxygen replaced by bromine (*dibromomethylcarbylamine*), 1878, A., 132.  
 — spontaneous decomposition of dichlorethylamine, 1880, A., 311.
- Tcherniac, Joseph.** See also **Edouard Grimaux, Victor Meyer, Milan Nevolé, Thomas Herbert Norton.**
- Teclu, Nicolae,** oligoclase from Wilmington, Delaware, 1873, 149.  
 — action of phosphorus pentachloride on tungstic anhydride, 1877, ii., 709.  
 — red antimony, 1880, A., 612.
- Tedeschi, Vittorio,** resoreinoldisulphonic acid, 1879, A., 934.
- Teed, Frank Litherland.** See **Chichester Alexander Bell.**
- Tellier, Charles,** determination of the true zero of thermometers, 1873, 129.  
 — on the use of methyl ether as a freezing agent and its application to the preservation of meat, 1875, 488.
- Tenison-Woods, Julian Edmund, and John Clark,** addition of tungsten and chromium to iron and steel, 1874, 1118.
- Tennant, James,** obituary notice of, 1881, T., 190.
- Ter Meer.** See **Meer.**
- Terne, Bruno,** a productive source of ammoniacal salts, 1873, 1170.  
 — manufacture of glue, 1877, i., 122.
- Terreil, Auguste,** action of sulphuric acid on cellulose, 1873, 370.  
 — new researches upon the preparation of mineral kermes, and on the action of alkaline carbonates and alkaline earths on antimonious sulphide, 1874, 339.  
 — new apparatus for estimating the tannin contained in the various astringent substances used in tanneries, 1874, 836.

- Terreil, Auguste**, preparation of pure nickel salts from commercial nickel, 1875, 427.
- determination of the alkali metals in silicates and in substances not attacked by acids, by means of barium hydrate, 1876, i., 716.
  - composition of the black matter obtained by calcining potassium ferrocyanide, 1876, i., 909.
  - analysis of magnetic native platinum from Nischne-Tagilsk (Ural), 1876, ii., 386.
  - metals accompanying iron, 1877, ii., 523.
  - oxidation of iron in a gas furnace, 1877, ii., 709.
  - analysis of metallic fragments obtained from Peruvian tombs at Ancon (Lima), 1879, A., 409.
  - new method for determining the melting point of organic substances, 1879, A., 673.
  - new determination of the equivalent of aluminium, 1879, A., 692.
  - phytolaccic acid, 1881, A., 286.
  - volumetric determination of peroxides, 1881, A., 843.
  - solubility of tricalcium phosphate in ammoniacal and neutral alkaline salts, 1881, A., 845.
- Terreil, Auguste**, and **A. Wolff**, resin from rosewood, 1880, A., 559.
- Terrill, W.**, crystals of limonite found in the coal beds of the Rhondda Valley, Glamorganshire, 1882, A., 282.
- Teschemacher, Edward Frederick**, determination of morphine in opium, 1877, ii., 231.
- Tesdorpf**, preservation of stable manure in deep stalls, 1882, A., 333.
- Tessié du Motay, Cyprien Marie**, method of preparing pure chlorine and hypochlorites, 1873, 96.
- preparation of potash, soda, or baryta from the corresponding sulphides, 1873, 414.
  - recovery of potash, soda, etc., from soap-water, 1873, 415.
  - purification and decoloration of beet juice, 1873, 424.
  - on the manufacture of permanganates of the alkaline earths, 1874, 1117.
- Tessier**, ferric chloride as a test for iodine, 1873, 527.
- Testa, Andrea**, action of potash on ethyl isochlorobutyrate, 1880, A., 870.
- Testa, Andrea**. See also **Luigi Balbiano**.
- Textor, Otto**. See **Luigi Gabba**.
- Thaer, Conrad Wilhelm Albrecht**, experimental enquiry as to the quantity of nitrogen which must be supplied to cultivated plants to ensure their normal development as field crops, 1879, A., 668.
- manuring experiments on wheat and rye, 1880, A., 508.
- Thalén, Tobias Robert**, bright line spectrum of scandium, 1880, A., 685.
- spectrum of thulium, 1881, A., 319.
- Than, Carl von**, the heat of combustion of the explosive mixture of oxygen and hydrogen in closed vessels, 1877, ii., 690.
- action of phenol vapour on organic matter at high temperatures, 1880, A., 72.
  - six lecture experiments, 1880, A., 212.
  - thermochemical investigations, 1881, A., 779.
  - comparison of the results of calorimetric measurements, 1882, A., 265.
- Thate, Alexander**, behaviour of *o*-nitrophenoxycetic acid with reducing agents, 1882, A., 849.
- Thau, Wilhelm Adolph C.**, a cheap method of evaporation suitable for works laboratories, 1876, ii., 336.
- Theegarten, Albert**, dichloroacetone, 1873, 1223.
- oxidation of chlorobromhydrin by chromic acid, 1874, 242.
  - chlorobromoacetone, 1874, 245.
  - a new constituent of Sumatra benzoin, 1874, 1098.
- Thenard, (Baron) Arnould**, electrometallurgy and electrochemical actions, 1877, ii., 269.
- Thenard, (Baron) Arnould Paul Edmond**, barium sulphocarbonate, 1875, 143.
- note on a blue substance occurring in clay, 1875, 1241.
- Thenard, (Baron) Arnould Paul Edmond**, and **(Baron) Arnould Thenard**, influence of electricity on mixtures of (*a*) marsh gas and carbon dioxide, (*b*) hydrogen and carbon monoxide, 1873, 864.
- new researches on the silent electrical discharge, 1873, 1093.
- Therius, Georg**, physical and chemical properties of wood oils, 1878, A., 664.
- Thibault, Paul**, an apparatus for recovering the iodine disengaged in the manufacture of superphosphate of lime, 1875, 106.
- apparatus for making superphosphates, 1875, 1302.



- Thibault, Paul**, modification of Will and Varrentrapp's method of estimating nitrogen, 1876, i., 433.
- Thibault, Paul**. See also **Jules Lefort**.
- Thibaut, David**, crystallised hyoseyamine, 1876, ii., 100.
- Thiercelin, L.**, extraction of iodine from mineral phosphates, 1875, 733.
- incineration of seaweeds in the manufacture of iodine, 1881, A., 318.
- Thierry, Maurice de**, a ureometer, 1882, A., 246.
- Thiessen, Fitter**, manuring of sugar beet, 1882, A., 1314.
- Thiriart, Louis**. See **Lucien Louis de Koninck**.
- Thörner, Wilhelm**, new derivatives of *p*-tolylphenyl ketone, 1876, ii., 197; 1877, i., 464; 1878, A., 67.
- apparatus for fractional distillation in a vacuum, 1877, i., 682.
- a quinone derivative occurring in *Agaricus atrotomentosus*, 1878, A., 575; 1880, A., 47.
- new organic acid occurring in *Agaricus integer*, 1880, A., 44.
- Thörner, Wilhelm**, and **Ernst Carl Theodor Zincke**, pinacones and pinaconins, 1878, A., 223, 425, 874; 1879, A., 317; 1880, A., 646.
- conversion of *o*-benzoyltoluene derivatives into anthracene derivatives, 1878, A., 231.
- diphenylmethylacetic acid, 1879, A., 322.
- Thollon, L.**, displacement of the lines of the spectrum by the motion due to the sun's rotation, 1879, A., 574.
- rays in the solar spectrum produced by atmospheric absorption, 1881, A., 1.
- observations on a group of rays in the solar spectrum, 1881, A., 333.
- Thoma, Alois**, production of iron and steel, 1874, 610.
- Thomas, Alfred**, *m*-bromobenzenesulphonic acid, 1877, ii., 458.
- Thomas, Joseph William**, on the gases enclosed in coals from the South Wales basin, and the gases evolved by blowers and by boring into the coal itself, 1875, 793.
- on the gases enclosed in cannel coals and jet, 1876, ii., 144.
- on some points in gas analysis, 1877, ii., 28.
- on the gases enclosed in lignite coal and mineral resin from Bovey Heathfield, Devonshire, 1877, ii., 146.
- estimation of the gases dissolved in water, 1877, ii., 806.
- Thomas, Joseph William**, on cuprous chloride and the absorption of carbonic oxide and hydrochloric acid gas, 1878, T., 72.
- action of hydrochloric acid upon various metallic salts, 1878, T., 367.
- on some points in the analysis of combustible gases, and in the construction of apparatus, 1879, T., 213.
- composition of the gas which issued from one of the shafts of Abercarn colliery, 1879, A., 357.
- Thomas, N.**, occurrence of native mercury in the Département de l'Hérault, 1876, ii., 386.
- Thomas, Thomas**, obituary notice of, 1873, 782.
- Thomas, W. R.**, obituary notice of, 1882, T., 238.
- Thompson, Claude Metford**, nitration of benzoyl cyanide and its derivatives, 1881, A., 814.
- Thompson, Claude Metford**. See also **Ludwig Claisen**.
- Thompson, Jacob Baynes**. See **James Pellatt Rickman**.
- Thompson, Lewis**, new products from coal gas, 1878, A., 404.
- Thoms, George**, Baltic peat, 1877, ii., 798.
- composition of a white deposit in teak wood, 1878, A., 1000; 1879, A., 996.
- ash analyses, 1880, A., 343.
- analyses of feeding stuffs, 1880, A., 343.
- Thoms, George**, and **Paul von Berg**, analysis of concretions taken from an abscess on the jawbone of a horse, 1880, A., 333.
- Thomsen, Alonzo L.**, mono- and dimethyltoluidines, 1878, A., 218.
- action of potassium cyanate on epichlorhydrin, 1879, A., 217.
- Thomsen, Hans Peter Jürgen Julius**, thermochemical investigations: affinity of hydrogen for the non-metallic elements, chlorine, bromine, iodine, oxygen, nitrogen, and carbon, 1873, 126, 338.
- basicity and constitution of periodic acid, 1873, 595.
- on the formation of the sulphur acids, 1873, 717.
- on Berthelot's researches on hydrochloric acid, 1873, 1096.
- thermochemical researches on the solution of various solid, liquid, and æriform substances in water, 1873, 1101.

- Thomsen, Hans Peter Jürgen Julius**, thermochemical researches on some oxidising and reducing agents, 1873, 1186; 1874, 530; 1875, 223.
- on the affinity of oxygen for chlorine, bromine, and iodine, 1873, 1188.
- thermochemical determinations of the affinities of oxygen for sulphur, selenium, and tellurium, 1873, 1190.
- on the common constant of affinity, 1873, 1192.
- heat produced by the neutralisation of the oxides of lanthanum, cerium, didymium, yttrium, and erbium, 1874, 430.
- preparation of hydrogen dioxide, 1874, 433.
- specific gravities and volumes of solutions of iodic and periodic acids, 1874, 433.
- basicity and constitution of iodic acid, 1874, 434.
- tables of affinity, 1874, 532.
- on the constitution of hydrochloric acid and chlorides, 1874, 952.
- on the existence of definite hydrates in the aqueous solutions of the acids, 1874, 1052.
- neutralisation phenomena and basicity of arsenious acid in aqueous solution, 1874, 1136.
- the heat of formation of the phosphorus acids, 1875, 31.
- the heat of formation of arsenious and arsenic acids, 1875, 32.
- preparation of crystalline hypophosphorous acid, 1875, 41.
- thermochemical researches, 1876, i., 29, 672; ii., 374; 1877, i., 571; ii., 566; 1879, A., 6; 1880, A., 363.
- on the neutralisation phenomena of phosphoric acid, 1876, i., 874.
- on neutralisation, 1876, ii., 157.
- preparation and properties of the chlorine and bromine compounds and of the oxide of gold, 1876, ii., 485.
- a pretended relation between the mechanical equivalent of heat and the molecular weights, 1877, i., 161.
- preparation of some platinum compounds, 1877, ii., 276.
- heat of solution of chlorine, bromine, and iodine compounds, 1877, ii., 693.
- heat of formation of chloric acid, 1877, ii., 696.
- on partial decomposition and formation of ethers, 1877, ii., 725.
- the constitution of crystals of barium iodide, 1877, ii., 839.
- amount of water in hydroauric chloride, 1878, A., 13.
- Thomsen, Hans Peter Jürgen Julius**, thermochemical researches; heat of solution of nitrates, sulphates, dithionates, and some other salts, 1879, A., 6.
- monohydrated sodium sulphate and dihydrated sodium carbonate, 1879, A., 194.
- zinc sulphhydrate, 1879, A., 206.
- composition of precipitated copper sulphide, 1879, A., 206.
- accuracy of thermochemical results, 1879, A., 432.
- heat of formation of metallic sulphides, 1879, A., 433.
- thermochemical investigation of the oxides and acids of nitrogen, 1880, A., 603, 689.
- thermochemical research on the carbonates, 1880, A., 82, 361.
- allotropic modifications of hydrogen, 1880, A., 89.
- heat of formation of cuprous chloride, 1880, A., 361.
- heat of formation of cyanogen, 1880, A., 367.
- heat of formation of ammonia, of the oxides of nitrogen, and of the nitrates, 1880, A., 603.
- heat of combustion of sulphur, 1880, A., 785.
- thermochemical investigation of the theory of the carbon compounds, 1880, A., 785.
- thermochemical researches on cyanogen and hydrocyanic acid, 1880, A., 840.
- constitution of isomeric hydrocarbons, 1880, A., 840.
- constitution and formula of benzene, 1881, A., 89, 159; 1882, A., 721.
- heat of combustion of benzene, 1881, A., 135.
- chemical energy and electromotive power of various galvanic combinations, 1881, A., 216.
- heat of combustion of carbon compounds, 1881, A., 219.
- benzene and dipropargyl, 1881, A., 495.
- ethane, 1881, A., 565.
- refractive power and heat of combustion, 1882, A., 567.
- benzene, dipropargyl, and acetylene: constitution of benzene, 1882, A., 721.
- Thomsen, Th.**, composition of wood, 1879, A., 613.
- multiples in the optical rotatory power of carbohydrates, 1881, A., 147.

- Thomsen, Th.**, molecular rotatory power of carbon compounds, 1881, A., 215, 709.
- optical rotatory power of the carbohydrates and their derivatives, 1881, A., 245.
  - multiples in the optical rotatory power of organic compounds, 1881, A., 257, 1020.
  - optical rotatory power of cane sugar in alkaline solutions, 1881, A., 1023.
  - rotation constants of cane sugar, 1881, A., 1023.
  - optical activity of malic acid and malates at different temperatures, 1882, A., 911.
- Thomson, Elmer.** See *Edwin J. Houston*.
- Thomson, George.** See *Edmund James Mills*.
- Thomson, George C.** See *Rudolph Fittig*.
- Thomson, James**, gaseous, liquid, and solid states of water substance, 1875, 126.
- Thomson, John Millar**, on the action of isomorphous salts in exciting the crystallisation of supersaturated solutions of each other, and some experiments on supersaturated solutions of mixed salts, 1879, T., 196.
- Thomson, John Millar, and William Popplewell Bloxam**, on the crystallisation from supersaturated solutions of certain compound salts, 1882, T., 379.
- Thomson, John Stuart**, notes on the dissociation of ammonia iron alum, 1879, T., 811.
- preparation of distilled water free from ammonia, 1879, A., 878.
- Thomson, William**, on the decomposition of eggs, 1875, 175.
- an apparatus for the estimation of tannic acid, 1876, i., 774.
  - action of different fatty oils upon copper, 1877, i., 237.
  - estimation of mineral oil or paraffin wax when mixed with other fats or oils, 1878, A., 1010.
  - the ferment produced by the morbid growth of the bioplasma of the yolk of egg, 1879, A., 478.
  - composition of ink, 1881, A., 67.
  - notes on lead pipes and lead contamination, 1882, A., 668.
- Thorn, William**, preparation of oxalic acid from sawdust, bran, and lignose, 1874, 297.
- removal of arsenic from sulphuric acid, 1876, i., 517.
- Thorn, William**, estimation of organic matter in animal charcoal by permanganate solution, 1876, i., 757.
- Thorne, Leonard Temple**, on the products of the action of alkalis on ethylic  $\beta$ -ethylacetosuccinate, 1881, T., 336.
- on dimethylmalonic acid and dimethylbarbituric acid, 1881, T., 543.
- Thorne, Leonard Temple.** See also *Edward Frankland*.
- Thorpe, Thomas Edward**, an improved form of filter pump, 1873, 132.
- on a method of estimating nitric, chloric, and iodic acids, 1873, 541.
  - researches on the specific volume of liquids, 1875, 731; 1876, ii., 41.
  - on the isometric relations of thallium, 1876, i., 859.
  - phosphorus pentathionide, 1877, i., 46.
  - contribution to the history of the Old Sulphur Well, Harrogate, 1877, i., 181.
  - on the theory of the Bunsen lamp, 1877, i., 627.
  - on heptane from *Pinus Sabina*, 1879, T., 296.
  - a contribution to the theory of fractional distillation, 1879, T., 544.
  - on the relation between the molecular weights of substances and their specific gravities when in the liquid state, 1880, T., 141, 327.
  - contributions to the history of the mineral waters of Yorkshire, 1881, T., 497.
  - preparation of pyrogallol for dry plate development, 1881, A., 662.
  - on the behaviour of zinc, magnesium, and iron as reducing agents with acidulated solutions of ferric salts, 1882, T., 287.
  - note on the action of the oxychlorides of sulphur on silver nitrate, 1882, T., 297.
- Thorpe, Thomas Edward, and Septimus Dyson**, on the action of thiophosphoryl chloride upon silver nitrate, 1882, T., 297.
- Thorpe, Thomas Edward, and John Isaac Watts**, on the specific volume of water of crystallisation, 1880, T., 102.
- Thorpe, Thomas Edward, and John Young**, combined action of heat and pressure upon the paraffins, 1873, 260.
- Thoulet, Julien**, note on chrome iron, 1881, A., 690.
- thermal conductivity of minerals and rocks, 1882, A., 790.

- Threadwell**, influence of different oil cakes on milk production, 1882, A., 321.
- Thresh, John Clough**, sulphuric acid in vinegar, 1876, i., 107.
- new method of detecting and estimating alum in bread and flour, 1876, i., 109.
- capsaicin, 1877, i., 720; 1878, A., 233.
- detection and approximate determination of minute quantities of alcohol, 1879, A., 279.
- soluble essence of ginger, 1880, A., 359.
- preparation of potassium bismuth iodide, 1880, A., 705.
- detection of bismuth, 1880, A., 752.
- determination of the alkaloids, 1880, A., 763.
- chemical examination of the Buxton thermal water, 1881, T., 388; 1882, T., 117.
- modified form of apparatus for collecting the gases dissolved in water, 1881, T., 399.
- contributions to the chemistry of the rhizome of *Zingiber officinale*, 1882, A., 626.
- Thudichum, John Louis William**, further researches on bilirubin and its compounds, 1875, 389.
- on some reactions of biliverdin, 1876, ii., 27.
- acetic acid, formic acid, etc., in the urine, 1877, ii., 504.
- thiocyanates in urine, 1877, ii., 505.
- cryptophanic and paraphanic acids, 1878, A., 81.
- phrenosin, 1882, A., 537.
- Thudichum, John Louis William**, and **Henry Wilson Hake**, on the estimation of hydrogen occluded by copper with special reference to organic analysis, 1876, ii., 251.
- Thudichum, John Louis William**, and **Charles Thomas Kingzett**, on glycerophosphoric acid and its salts, as obtained from the phosphorised constituents of the brain, 1876, ii., 20.
- on hemine, hematine, and a phosphorised substance contained in blood corpuscles, 1876, ii., 255.
- note on some trials of Frankland and Armstrong's combustion process *in vacuo*, 1876, ii., 363.
- Thürach, Hans**, preparation of pure bismuth and of bismuth compounds, 1877, i., 283.
- Thurach, Hans**, on substances which accompany molybdenum glance, 1877, i., 285.
- Thum, P. A.**, gas generator, 1875, 108.
- the galvanizing of iron 1876, i., 793.
- on Schaffner's method of estimating zinc, 1877, ii., 221.
- zinc dust, 1878, A., 837.
- Thumb, Camillo**. See *Herrmann Eissfeldt*.
- Thurnlackh**. See *Garzarolli-Thurnlackh*.
- Tibirică, J.** See *Victor Merz*.
- Tichborne, Charles R. C.**, action of heat on solutions of hydrated salts, 1873, 34.
- condition of the impurities in coal gas of high and low illuminating power, 1874, 1189.
- fluorescence as a means of detecting adulteration, 1876, i., 118.
- some peculiarities of the Vartry water and the action of that water on boiler plates, 1879, A., 85.
- Tichomiroff, Vladimir A.** See *Alexander P. Lidoff*.
- Tidy, Charles Meynott**, the processes for determining the organic purity of potable waters, 1879, T., 46.
- river water, 1880, T., 268.
- Tidy, Charles Meynott**, and **William Bathurst Woodman**, on ammonia in the urine in health and in disease, 1873, 516.
- Tiede, H.**, manuring potatoes, 1881, A., 1078.
- Tieftrunk, F.**, gas-tight cloth, 1876, i., 136.
- formation of naphthalene, 1878, A., 819.
- Tiegel, Ernst**. See *Pil Plösz*.
- Tiegheem, Philippe Edouard Léon van**, on the digestion of the perisperm (*albumin*), 1877, ii., 349.
- the butyric ferment in the Carboniferous period, 1880, A., 334.
- gektinous matter in beets, 1880, A., 908.
- alcoholic fermentation in the roots of an apple tree, 1881, A., 115.
- Tiegheem, Philippe Edouard Léon van**, and **Gaston Bonnier**, torpid condition of seeds, 1881, A., 837.
- Tiemann, (Johann Carl Wilhelm) Ferdinand**, examination of the methods of water analysis, 1873, 945; 1874, 91.
- vanillic acid, 1875, 1198.
- on a mode of synthesis of vanillin, and on hydrovanillin and vanillyl alcohol, 1876, i., 75.



- Tiemann, (Johann Carl Wilhelm) Ferdi-**  
*nand*, on ethylvanillin, methylvanil-  
 lin, and coniferyl alcohol, 1876, i., 76.  
 — on the formation of vanillic acid  
 and vanillin from eugenol and on the  
 synthesis of ferulic acid, 1876, i.,  
 711.  
 — on coniferyl and vanillin com-  
 pounds, 1876, ii., 85.  
 — protocatechuic series of compounds,  
 1878, A., 577.  
 — relation between the xylenols and  
 some other hydroxy-derivatives of  
 benzene, 1879, A., 924.  
 — preparation of amido-acids from  
 the cyanhydrins of aldehydes and  
 ketones, 1882, A., 55, 57.  
 — amido-acids from anisaldehyde and  
 from acetophenone, 1882, A., 57.  
**Tiemann, Ferdinand, and Louis Fried-**  
*länder*, aromatic amido-acids, 1880,  
 A. 473.  
 — amido-acids from the cyan-  
 hydrins of benzaldehyde, acetone, and  
 diethyl ketone, 1882, A., 56.  
**Tiemann, Ferdinand, and Wilhelm**  
**Haarmann**, coniferin, 1874, 895.  
 — a method of estimating vanil-  
 lin in vanilla, 1876, i., 112.  
**Tiemann, Ferdinand, and Emil Helken-**  
**berg**, aldehydes from orcinol and  
 their derivatives, 1879, A., 719.  
**Tiemann, Ferdinand, and Hermann**  
**Herzfeld**, synthesis of coumarin from  
 salicylic aldehyde, 1877, i., 708.  
 — the derivatives of *p*-oxybenz-  
 aldehyde, 1877, ii., 893.  
**Tiemann, Ferdinand, and Paul Koppe**,  
 constituents of wood-tar, 1882, A.,  
 50.  
 — preparation of protocatechuic  
 aldehyde from catechol: derivatives  
 of guaiacol and creosol, 1882, A., 54.  
**Tiemann, Ferdinand, and Ludwig**  
**Landshoff**, aldehydhydroxybenzoic  
 acids from *m*-hydroxybenzoic acid,  
 1879, A., 927.  
**Tiemann, Ferdinand, and Leo Lewy**,  
 resorcinialdehyde, resorcyaldehyde,  
 and certain of their derivatives, 1878,  
 A., 423.  
**Tiemann, Ferdinand, and Kucka Uki-**  
**mori Matsumoto**, derivatives of di-  
 methylprotocatechuic and vanillic  
 acids, 1876, ii., 524.  
 — dimethoxybenzoylcarbonic  
 acid and its relation to  $\alpha$ -homovera-  
 tric acid, 1878, A., 503.  
**Tiemann, Ferdinand, and Benno Mendel-**  
**sohn**, constituents of wood-tar creo-  
 sote, 1876, i., 74.
- Tiemann, Ferdinand, and Benno Mendel-**  
**sohn**, constitution of compounds of  
 the coniferyl and vanillin series, 1877,  
 i., 87.  
 — isomerides of opianic, hemi-  
 pinic, and quercimeric acids, 1877, ii.,  
 487.  
 — constituents of creosote from  
 beechwood tar, 1877, ii., 888.  
**Tiemann, Ferdinand, and Wilhelm**  
**Heinrich Max Müller**, quinol deriv-  
 atives, 1882, A., 52.  
**Tiemann, Ferdinand, and Nanjosi**  
**Nagai**, action of acetic anhydride on  
 coniferin and some of its derivatives,  
 1876, i., 77.  
 —  $\alpha$ -homovanillic acid and de-  
 rivatives, 1877, ii., 339.  
 — synthesis of caffeic acid and  
 derivatives of caffeic and hydrocaffeic  
 acids, 1878, A., 579.  
**Tiemann, Ferdinand, and Julius Oppen-**  
**mann**, three isomeric amidocinnamic  
 acids and carbostyryl, 1881, A., 169.  
**Tiemann, Ferdinand, and Adolf Par-**  
**risius**, resorcinol derivatives, 1881,  
 A., 270.  
**Tiemann, Ferdinand, and Karl Piest**,  
 phenylsarcosine, 1882, A., 50.  
**Tiemann, Ferdinand, and Christian**  
**Preusse**, quantitative estimation of  
 oxygen dissolved in water, 1880, A.,  
 137.  
 — methods for indicating the  
 presence of organic matter in water,  
 1880, A., 290.  
**Tiemann, Ferdinand, and Carl Reimer**,  
 saccharovanillic acid, 1875, 1199.  
**Tiemann, Ferdinand, and Carl Ludwig**  
**Reimer**, *o*- and *p*-aldehydosalicylic  
 acids, *o*-aldehydo-*p*-oxybenzoic acid,  
 and the phenoldicarboxylic acids  
 thence obtained, 1878, A., 225.  
 — umbelliferone derivatives,  
 1879, A., 720.  
**Tiemann, Ferdinand, and Karl Schotten**,  
 oxytoluic aldehydes from the three  
 isomeric cresols and the corresponding  
 oxytoluic acids, 1878, A., 875.  
**Tiemann, Ferdinand, and Johannes**  
**Streng**, constitution of orcinol, 1882,  
 A., 51.  
**Tiemann, Ferdinand, and Carl Wilhelm**  
**Will**, hesperidin and its derivatives,  
 1881, A., 739.  
**Tiemann, Ferdinand.** See also *Eugen*  
*Baumann*, *Christian Preusse*, *Carl*  
*Reimer*.  
**Tilden, William Augustus**, on aqua  
 regia and the nitrosyl chlorides, 1874,  
 630.

- Tilden, William Augustus**, action of nitrosyl chloride on organic bodies. Part I. On phenol, 1874, 851.  
 — action of nitrosyl chloride on organic bodies. Part II. On turpentine oil, 1875, 514.  
 — essential oil of cherry-laurel, 1875, 1258.  
 — further researches on the crystalline constituents of Barbados and Socotrine aloes, 1875, 1270.  
 — on the oxidation products of the aloins, 1877, ii., 264, 903.  
 — on the hydrocarbons obtained from the *Pinus sylvestris*, with remarks on the constitution of the terpenes, 1878, T., 80.  
 — on terpin and terpinol, 1878, T., 247; 1879, T., 286.  
 — determination of specific gravities, 1879, A., 197.  
 — an examination of distilled essence of lemon, 1879, A., 386.  
 — compounds of the terpenes with hydrochloric acid, 1879, A., 943.  
 — light resin oil, 1881, A., 101.
- Tilden, William Augustus**, and **William Ashwell Shenstone**, isomeric nitroso-terpenes, 1877, i., 554.
- Tilden, William Augustus**. See also **Henry Edward Armstrong**.
- Timiriazoff, Clementz A.**, decomposition of carbonic acid in the solar spectrum by the green parts of plants, 1874, 285; 1877, ii., 635.
- Tissandier, Gaston**, atmospheric dust, 1874, 672; 1881, A., 843.  
 — determination of carbonic acid in air collected by the balloon "le Zenith," 1875, 1051.  
 — ferruginous corpuscles in the atmosphere, 1876, i., 353.  
 — crystals from atmospheric water, 1876, i., 891.  
 — presence of nickel in atmospheric dust, 1876, ii., 614.
- Tisserand, Eug.**, action of cold on milk, 1876, ii., 111.
- Tizzoni, Guido**, and **Michele Fileti**, importance of light for the formation of hæmoglobin, 1882, A., 751.
- Tjaden-Modderman, Rudolph Sicco**, characters of the normal constituents of beer, as tested by the methods of Stas-Otto and Dragendorff, 1877, ii., 809.  
 — purification of sulphuric acid by crystallisation, 1882, A., 1163.
- Tobias, Georg**. See **Carl Theodor Liebermann**.
- Tobien, Alexander**, Veratrum alkaloids, 1878, A., 589.
- Tönnies, Paul**, action of bromine on pyromucic acid, 1878, A., 785.  
 — action of nitrous acid on unsaturated hydrocarbons, 1879, A., 35.  
 — action of nitrosyl chloride on unsaturated hydrocarbons, 1879, A., 517.  
 — conversion of furfuraligalic acid into azelaic acid, 1879, A., 915.  
 — relation of dibromopyromucic acid to mucobromic acid, 1879, A., 918.  
 — action of nitrous acid on anethol, 1881, A., 167.
- Tönnies, Paul**. See also **Adolf von Baeyer**.
- Törnebohm, Alfred Elis**, the distribution of zircon in rocks, 1877, ii., 577.  
 — the ferruginous rocks of Ovitak and Assuk, in Greenland, 1881, A., 28.
- Tollens, Bernhard**, preparation of parabanic acid, 1873, 283.  
 — detection of sulphur by the blow-pipe, 1873, 1160.  
 — compounds of starch with potash and soda, 1874, 245, 565.  
 — the hydrate of parabanic acid, 1875, 557.  
 — melting point of  $\beta$ -dibromopropionic acid, 1876, i., 561.  
 — specific rotatory power of glucose, 1876, ii., 284; 1877, i., 265.  
 — injurious character of many objects made of indiarubber, 1877, i., 240.  
 — lecture experiments: I. Decomposition of glass by boiling water; II. Demonstration of the presence of alcohol in beer and wine; III. Ascent of water caused by evaporating surfaces, 1877, i., 270.  
 — specific rotatory power of cane sugar, 1877, ii., 875; 1879, A., 136, 557.  
 — oxidation of levulinic acid, 1879, A., 523; 1881, A., 411.  
 — specific rotation of cane sugar in different solvents, 1881, A., 243; 1882, A., 30.  
 — Scheibler's method of estimating sugar in beet, 1881, A., 851.  
 — diabetic urine, 1881, A., 1162.  
 — aldehyde and iodoform reactions, 1882, A., 107.  
 — formaldehyde or oxymethylene, 1882, A., 1277.  
 — silver solution as a reagent for aldehyde, 1882, A., 1329.
- Tollens, Bernhard**, and **Adolf Loë**, glyceryl ether, 1882, A., 31.
- Tollens, Bernhard**. See also **Erich Dieck**, **August (Freiherr) von Grote**, **Adolf Grupe**, **Edward Alexander**

- Kehrer, *Wilhelm Julius Otto Leopold*  
 Kirchner, *Franz Wilhelm Theodor*  
 Christian Pfeiffer, *Otto Philippi*, *Hermann Rodewald*, *Richard Wagner*.
- Tollinger, *Johann*, on the thermic effect produced by dissolving ammonium nitrate in water, and on the value of this salt for freezing mixtures, 1876, ii., 40; 1877, i., 678.  
 — determination of the electric conductivity of certain liquids with a constant current, 1878, A., 103.
- Tomaszewicz, *A.*, physiological action of chloral and trichloroacetic acid, 1874, 814.
- Tomlinson, *Charles*, supersaturated saline solutions, 1873, 720; 1880, A., 438.  
 — on the action of solids and of friction in liberating gas from solutions, 1875, 330; 1876, i., 186.
- Tommasi, *Donato*, chloroacetylurea, 1873, 758, 880.  
 — action of chloroacetyl chloride on aniline and toluidine, 1873, 911.  
 — the acid derivatives of naphthylamine, 1873, 1040.  
 — action of benzyl chloride on laural camphor (*Laurus Camphora*), 1874, 312.  
 — new source of magnetism, 1875, 605.  
 — the reducing action of hydrogen, 1878, A., 197.  
 — non-existence of nascent hydrogen, 1880, A., 2.  
 — reduction of gold chloride by hydrogen in presence of platinum, 1880, A., 705.  
 — isomeric modification of aluminium hydrate, 1880, A., 849.  
 — apparatus for showing the dissociation of ammonium salts, 1881, A., 343.  
 — action of potassium nitrite on ammonium chloride, 1881, A., 788.  
 — decomposition of sodium salts by cupric hydrate, 1881, A., 978.  
 — electrolysis of water, 1882, A., 134, 253, 1019.  
 — action of cold on the voltaic arc, 1882, A., 259.  
 — electrolysis, 1882, A., 789.  
 — chemical energy of the voltaic pile, 1882, A., 1155.  
 — reply to Berthelot's note on the electromotive force of a zinc carbon couple, 1882, A., 1156.  
 — chemical work done by the galvanic cell, 1882, A., 1257.  
 — numerical relations between thermochemical data, 1882, A., 1257.
- Tommasi, *Donato*, action of aluminium on cupric chloride, 1882, A., 1266.
- Tommasi, *Donato*, and *H. David*, acetylpyrate, 1873, 1238.
- Tommasi, *Donato*, and *Raphael Meldola*, action of trichloroacetyl chloride on amines; action upon aniline, 1874, 313.
- Tommasi, *Donato*, and *Georges Quesneville*, action of zinc on acetyl chloride, 1873, 614.
- Tommasi, *Donato*. See also *Ch. Froté*, *Raphael Meldola*.
- Tommasi, *Tommaso*, and *Donato Tommasi*, testing urine for phenol by the pine-wood reaction, 1882, A., 245.
- Tompkins, *Harry Kneebone*. See *Edward Frankland*.
- Toms, *Frederick Woodland*, composition and properties of wood gunpowders, 1878, A., 923.
- Toovey, ink for photolithography and phototypography, 1882, A., 114.
- Topf, *G.* See *Carl Theodor Liebermann*.
- Toppenenthal, *H.* (and others), manuring experiments with potatoes, 1881, A., 1078.
- Topsøe, *Haldor*, and *C. Christiansen*, crystallographical optical investigations with special reference to isomorphous bodies, 1873, 994.
- Tornøe, *Hercules*, results of the Norwegian expedition to the North Sea, 1879, A., 1060.
- Torre. See *Del Torre*.
- Tóth, *Victor*. See *Josef Maria Eder*.
- Toussaint, *F.*, solubility of salicylic acid, 1876, i., 395.
- Toussaint, *H.*, tuberculosis poison, 1882, A., 637.  
 — researches on the cause of tuberculosis, 1882, A., 1120.
- Towler, *J.*, the albertotype, 1873, 124.
- Trachsel, *Eugen*, extension of Dietrich's table for the calculation of nitrogen, 1880, A., 346.
- Trapp, *Julius*, on the camphor of *Ladum pulustre*, 1875, 1037.
- Traub, *Charles G.*, bark of *Sambucus canadensis*, 1881, A., 1163.
- Traube, *Moritz*, action of ferments, 1874, 486.  
 — behaviour of yeast in media free from oxygen, 1875, 102.  
 — pure yeast, 1876, i., 958; 1877, i., 107.  
 — activity of oxygen, 1882, A., 795.
- Traube, *Moritz*, and *Richard Gscheidlen*, the theory of putrefaction, 1874, 997.

- Treadwell, Frederick Pearson**, a new series of volatile organic bases, 1881, A., 895.  
 — dipropylketine, 1882, A., 166.  
 — estimation of chromium, 1882, A., 1231.
- Treadwell, Frederick Pearson, and Edward Steiger**, nitrosoacetone and ketine, 1882, A., 911.
- Treadwell, Frederick Pearson**. See also *Victor Meyer*.
- Trechmann, Charles O.**, notes on turnerite, 1877, ii., 117.  
 — a probably dimorphous form of tin and some crystals found associated with it, 1882, A., 576.
- Trécul, Auguste Adolphe Lucien**, confirmation of some of the chemical phenomena observed by Pasteur, 1873, 84.  
 — on fermentation, 1873, 291.  
 — change of colour in chlorophyll, 1877, ii., 629.
- Treiber, Theodor**. See *Carl Joseph Lintner*.
- Tresca, Henri Edmond**. See *E. Allard*.
- Treupel, W.** See *Adolph Claus*.
- Treutler, Clemens**, means of facilitating the distribution of potash in the soil, 1873, 1052.
- Trève, Auguste Robert Stanislas, and L. Durassier**, action of acids on iron, 1877, i., 175.
- Tribe, Alfred**, specific gravity bottle for liquids which inflame spontaneously in contact with air, 1874, 16.  
 — agglomeration of finely divided metals by hydrogen, 1874, 415.  
 — experimental contributions to the theory of electrolysis, 1876, ii., 36.  
 — experimental researches into electric distribution as manifested by that of the radicles of electrolytes, 1881, A., 963.  
 — refraction of electricity, 1881, A., 963; 1882, A., 260.  
 — new method of measuring certain chemical affinities, 1882, A., 6, 449.
- Tribe, Alfred**. See also *John Hall Gladstone*.
- Trifanowsky, D.**, on the composition of human bile, 1875, 775.
- Trippke, Paul**, the enstatite in the olivine nodules of the Grödlitzberg, 1879, A., 514.  
 — the twin formation of phillipsite from Sirgwitz, 1879, A., 515.  
 — note on the Silesian basalts and their mineral constituents, 1880, A., 19.
- Troilius, Magnus**, analysis of rail steel, 1882, A., 336.
- Troilius, Magnus**, method for determination of carbon in steel, 1882, A., 337.
- Trojanowsky, Piers**, contributions to the chemical knowledge of cacao, 1877, ii., 363.
- Tromenee, de**, a method for comparing different kinds of gunpowder, 1873, 1260.
- Trommer**, condensed milk, 1874, 300; 726.
- Trompeter, Hugo**. See *Heinrich August Bernthsen*.
- Troost, Louis Joseph**, new method of recognising dissociated vapours, 1877, ii., 273.  
 — the vapour of chloral hydrate, 1877, ii., 829, 830; 1881, A., 573.  
 — vapour densities, 1878, A., 365, 832.  
 — new compounds of hydrochloric acid with ammonia, 1879, A., 501.  
 — distillation of a heterogeneous liquid, 1879, A., 875.  
 — basic hydrosulphides of ammonia, 1879, A., 880.  
 — employment of diffusion in the study of the phenomena of dissociation, 1879, A., 1006.  
 — vapour densities of high boiling organic compounds, 1879, A., 1025.  
 — maximum tension and vapour density of alizarin, 1879, A., 1039.  
 — density of iodine vapour, 1880, A., 695.  
 — new compounds of hydrobromic and hydriodic acids with ammonia, 1881, A., 972.  
 — boiling point of zinc, 1882, A., 1028.  
 — determination of vapour densities at the boiling point of selenium, 1882, A., 1159.  
 — influence of the compressibility of the elements on the compressibility of their compounds, 1882, A., 1160.  
 — new compounds of ammonia with nitric and acetic acids, 1882, A., 1162.  
 — molecular weights of phosphorus iodides, 1882, A., 1264.
- Troost, Louis Joseph, and Paul Hautefeuille**, some reactions of the chlorides of boron and silicon, 1873, 351.  
 — allotropic transformations of phosphorus, 1873, 599.  
 — on the solution of gases in iron, cast iron, and steel, 1873, 729.  
 — derivatives of the silicon oxychlorides, 1873, 746.  
 — on hydrogenised palladium, 1874, 660.



- Troost, Louis Joseph**, and **Paul Hautefeuille**, combinations of hydrogen with the alkali metals, 1874, 767.
- density of hydrogen combined with metals, 1874, 768.
- allotropic phosphorus, 1874, 769.
- solution of hydrogen in metals and decomposition of water by iron, 1875, 610.
- calorimetric investigation of the carbides of iron and manganese, 1875, 611.
- on manganiferous cast irons (*spiegels*), 1875, 790.
- calorimetric study of the silicides of iron and manganese, 1875, 1239.
- on a boride of manganese and on the function of manganese in the metallurgy of iron, 1876, i., 883.
- researches on silicon, its subfluorides, subchlorides, and the organic derivatives of the latter, 1876, ii., 597.
- some reactions of the chlorides of boron and silicon, 1876, ii., 599.
- the laws of the compressibility and the coefficients of dilatation of certain vapours, 1877, i., 32.
- determination of vapour densities, 1877, i., 33.
- researches on the solution of gases in iron, steel, and manganese, 1877, i., 51.
- on the errors resulting from the application of the law of mixture of vapours, in the determination of their density, 1877, i., 431.
- the formation of compounds at a temperature considerably above that of their decomposition, 1877, ii., 273.
- preparation of silicon oxychlorides, 1881, A., 508.
- Troost, Louis Joseph**. See also *Etienne Henri Sainte-Claire Deville*.
- Troschke**. See *H. Birner*.
- Troschke, H.** See *Emil Fischer, Carl Theodor Liebermann*.
- Truchot, P.**, proportion of carbonic acid in atmospheric air: variation at different heights, 1874, 19.
- note on the quantity of ammonia contained in the air at different heights, 1874, 223.
- presence of lithia in the soil of Limagne and in the mineral waters of Auvergne: estimation of this alkali by means of the spectroscope, 1874, 1072.
- Truchot, P.**, on errors arising from the use of Bohemian glass vessels in chemical analysis, especially in alkalimetry, 1875, 382.
- observations on the arable soils of Auvergne: the importance of phosphoric acid in respect to fertility, 1876, i., 729.
- decomposition of organic liquids by the electric spark, with production of the fundamental hydrocarbons, 1878, A., 210.
- fertility of volcanic soils, 1878, A., 604.
- Truelle, Auguste**, estimation of sugars and acid in thirty-seven varieties of eating-apples and six varieties of cider-apples, 1877, ii., 514.
- Trümpler, E.**, action of soda solution on picramic acid, 1879, A., 717.
- Truphème, V.**, preparation of cocaine, 1882, A., 75.
- Tschaplowitz, E.**, water in seeds, 1877, ii., 797.
- specific gravities of seeds, 1877, ii., 798.
- absorption of water by leaves, 1879, A., 819.
- ripening of apples after gathering, 1880, A., 179.
- determination of dry substances by the use of alcohol, 1880, A., 351.
- Tscheck**. See *Čech*.
- Tschelzoff, Ivan**, determinations of nitrogen in explosive ethereal nitrates, 1880, A., 355.
- Tschermak, Gustav**, mica spherules from Hermannschlag in Moravia, 1873, 1009.
- potassium salt from India, 1874, 134.
- jordanite from Nagyag, 1874, 661.
- ludwigite, a new mineral from the Banat, 1875, 546.
- form and transformation of the labradorite of Verespatak, 1875, 743.
- formation of meteorites and volcanic agency, 1876, i., 536; 1877, i., 178.
- the crystallographic system of muscovite, 1876, ii., 51.
- apatite from Unter-Sulzbach, 1876, ii., 53.
- the mica-group, 1878, A., 711; 1880, A., 532.
- the meteoric iron of Hungen, 1879, A., 366.
- pelagosite, 1879, A., 604.
- the meteorite of Grosnaja, 1880, A., 20.
- remarks on a paper by A. Makowsky on pseudochrysolites (bottle-

- stones) of Moravia and Bohemia, 1882, A., 581.
- Tschermak, Gustav**, and **Ludwig Sipöcz**, the clintonite group, 1881, A., 233.
- **zoisite**, 1881, A., 1003.
- Tschirikoff, Andrei D.**, use of palladium for absorbing the hydrogen set free in sealed tubes during certain reactions, 1882, A., 424.
- Tschirwinsky**, derivatives of monoxymazobenzene, 1873, 1027.
- Tschirwinsky, Nicolai P.**, influence of glycerol on the decomposition of proteids in the animal body, 1880, A., 817.
- Tucker, J. H.**, action of organic matter, not sugar, in cane and beet products on alkaline copper oxide solution, 1881, A., 1177.
- Tugolessoff, J.**, the hydrocarbon  $C_{10}H_{16}$  from diamylene, 1880, A., 231.
- Tunner, Peter**, direct preparation of iron from its ores, 1873, 953, 1171.
- on mechanical puddling, 1875, 108.
- the use of iron containing a large amount of silicon in Bessemer's process, 1876, i., 130.
- separation of phosphorus from iron, 1878, A., 352.
- malleable iron castings, 1878, A., 623.
- Tupoleff, Alexander**, ethyl bromobutyrate, 1874, 565.
- ethylmalonic acid, 1874, 568.
- Tuson, Richard Vinc.** and **Edmund Neison** (now **Edmund Neville Nevill**), volumetric estimation of mercury, 1877, ii., 679.
- Tuxen, Chr. Fr. A.**, absorption of salts by the soil, 1881, A., 1165.
- Grandean's theory of the fertility of a soil, 1881, A., 1166.
- application of Knop's method to Danish soils, 1882, A., 244.
- Tweedie, George R.**, new method of producing a coating of magnetic iron oxide on iron surfaces, 1879, A., 840.
- Tyndall, John**, on Buff's experiments on the diathermancy of air, 1881, A., 966.
- action of an intermittent beam of radiant heat on gaseous matter, 1881, A., 966.
- Typke, Paul George William**, a new nickel mineral from New Caledonia, 1877, i., 285.
- diazobenzene derivatives, 1878, A., 219.
- U.**
- Uelsmann, Hermann**, contributions to the analysis of iron, 1876, ii., 657.
- Uelsmann, Hermann**, solution of molybdenum in nitric acid, 1877, ii., 222.
- estimation of iron by stannous chloride, 1877, ii., 223.
- Uhlemann, Ernst Doear**, *m*-chlorophenol, 1878, A., 978.
- Ulbricht, Richard**, seeds of the corn-cockle as fodder and distillery material, 1880, A., 501.
- Parkes' method of estimating copper, 1880, A., 510.
- must and wine analysis, 1880, A., 586; 1881, A., 1182; 1882, A., 1000.
- Ulex, G. L.**, estimation of alcohol in fusel oil, 1873, 1164.
- determination of iodine in cuprous iodide, 1876, i., 747.
- Ullik, Franz**, gelatinous silica: an inorganic membrane, 1879, A., 199.
- absorptive powers of soils, 1879, A., 667.
- agricultural experiments on irrigated land, 1879, A., 825.
- application of natural products as manures, 1880, A., 417.
- steeping of barley, 1882, A., 645.
- Ullrich, Ed.**, and **Hugo (Ritter) von Perger**, anthranthic acid, 1876, ii., 300.
- Ulm, Georg.** See **Josef Maria Eder**.
- Umlauft, Wenzel L.** See **Ernst Schulze**.
- Unger, C.**, ultramarine, 1873, 140; 1874, 1062.
- Unger, H.**, chemical examination of the "contact-zones" of the aluminous slate and granite block of Barr-Andlau, 1877, ii., 413.
- Untch, G.**, the basalts of Styria, 1873, 1115.
- Unzeitig, Johann.** See **Wilhelm Knecht**.
- Uppekamp, Julius**, some derivatives of secondary hexyl alcohol, 1875, 552.
- Urbain, Victor**, dissociation of sodium bicarbonate at 100°, 1876, ii., 603; 1877, i., 439.
- Urbain, Victor**, and **Honoré Renoul**, a compound of alumina with carbonic acid, 1879, A., 885.
- Urbain, Victor.** See also **Edmond Fremy, Edouard Matthieu**.
- Urech, Friedrich**, cyanogen derivatives of acetone, 1873, 59.
- lacturamic acid and laetylurea, 1873, 380.
- cyano-derivatives of acetaldehyde and acetaldehyde-ammonia, 1874, 147.
- reaction of acetone with CNK, CNSK, HCl, and  $H_2O$ , 1878, A., 488; 1880, A., 545.

- Urech, Friedrich**, action of potassium carbonate on isobutaldehyde, 1879, A., 520; 1880, A., 103, 538.  
 — action of certain reagents on *p*-isobutaldehyde, 1880, A., 103.  
 — polymerides of isobutaldehyde, 1880, A., 104.  
 — vapour density of the viscous polymeric of isobutaldehyde, 1880, A., 620.  
 — inversion of cane sugar by hydrochloric acid at the ordinary temperature, 1881, A., 243; 1882, A., 30.  
 — action of bromine on acetic anhydride, acetic bromide, ethyl acetate, ethyl succinate, etc., 1881, A., 248.  
 — investigation of the product of the action of bromine on ethyl succinate, 1881, A., 414.  
**Urech, Friedrich**. See also *Carl Hell, Johannes Wislicenus*.  
**Urich, A.** See *Ernst Schulze*.  
**Ustimowitsch, G.**, alleged power of glycerin to replace sugar, 1877, i., 220.

## V.

- Vakovitch**. See *Al. Colley*.  
**Vála, Jos., and Rudolf Helmhacker**, delvauxite, 1875, 739.  
**Valenciennes, Achille A.**, note on the metallurgy of bismuth, 1874, 832.  
**Valenta, Eduard**. See *José Maria Eder*.  
**Valente, Lorenzo**, supposed synthesis of glucose, 1881, A., 242.  
 — essential oil from hemp, 1881, A., 284.  
**Valente, Lorenzo**. See also *Stanislaw Cannizzaro, Giovanni Carnelutti*.  
**Valentin, William George**, obituary notice of, 1880, T., 260.  
**Valkenburg, S. Draisma van**, preparation of iodine-iron cod liver oil, 1881, A., 131.  
**Valson, C. Alph.**, modular properties of refractive powers in saline solutions, 1873, 460.  
**Valson, C. Alph.** See also *Pierre Antoine Favre*.  
**Vangel, B.**, action of dehydrating substances on organic acids, 1880, A., 459.  
**Van't Hoff**. See *Hoff*.  
**Varenne, Eugène**, preparation of anolin, 1878, A., 438.  
**Varenne, Eugène, and Em. Hebré**, purification of hydrogen, 1878, A., 111.  
**Varenne, Eugène, and Pauleau**, solubility of barium and strontium sulphates in concentrated sulphuric acid, 1882, A., 465.  
**Varenne, Eugène**. See also *L. Léon A. Prunier, François Ruyssen*.  
**Varenne, L.**, compound of chromic acid with potassium fluoride, 1879, A., 1016.  
 — formation of crystalline metallic oxides by means of potassium cyanide, 1879, A., 1016.  
 — passive state of iron, 1880, A., 211; 1881, A., 343.  
 — action of hydrofluoric acid on ammonium dichromate, 1881, A., 225.  
 — hydrated chromium bromide, 1882, A., 280.  
 — action of hydracids on alkaline chromates, 1882, A., 280.  
**Vassilief**. See *Wassilieff*.  
**Vaucher, G., ly-ché**, a new thickening material, 1879, A., 187.  
**Vautelet, Et.**, disinfection and preservation of animal matters, such as blood, for agricultural purposes, 1880, A., 929.  
**Vedova, Frederick George**, improvements in the manufacture of materials containing tannic acid, 1879, A., 496.  
**Vélain, Charles**, on a vitreous orthoclase from the volcanic sands of the island of Raehgoium (province of Oran, Algeria), 1874, 1145.  
 — analysis of volcanic gases in the island of Saint-Paul, 1875, 1242.  
 — microscopical study of the glasses resulting from the fusion of the ashes of grass, etc., 1881, A., 692.  
 — volcanic rocks of Easter Island (Rapa-Nui), 1882, A., 481.  
**Velden, Adolf von den**, contributions to the knowledge of the three isomeric oxybenzoic acids, 1877, ii., 337.  
**Velden, Reinhard von den, and Eugen Baumann**, behaviour of the terpenes in the organism, 1877, i., 487.  
**Veley, Victor Herbert**, on some higher oxides of manganese and their hydrates, 1880, T., 581; 1882, T., 56.  
**Venable, Frank P.**, mutual relations of potassium and sodium almas in aqueous solution, 1880, A., 83.  
 — livingstonite, 1880, A., 95.  
 — tungsten-manganese bronze, 1880, A., 199.  
 — derivatives of the heptane from *Pinus Subiniana*, 1881, A., 82.  
**Verne, Claude**. See *Edme Alfred Bourgoin*.  
**Vernet, G. Louis**, glucoside from the ivy, 1881, A., 440.

- Verneuil, Auguste Victor Louis**, and **Léon Bourgeois**, artificial production of scorodite, 1880, A., 613.
- Vernon Harecourt**. See **Harecourt**.
- Verryken, J. L.**, detection of metallic poisons, 1874, 603.
- Versmann, Frederick**, an improved process for preparing anthracene, 1873, 956.
- anthracene testing, 1877, i., 347.
- Vesque, Julien**, artificial production of crystals of calcium oxalate, similar to those found in plants, 1874, 358.
- absorption of water by plant roots, 1878, A., 681.
- influence of salts on the absorption of water by roots, 1880, A., 911.
- Vesque, Julien**. See also **Pierre Paul Dehérain**.
- Vibrans, O.**, estimation of carbon dioxide, 1876, i., 434.
- prevention of boiler incrustation by de Haën's method, 1876, i., 450.
- the use of phosphoric acid in the manufacture of beet-sugar, 1877, i., 357.
- choice of beetroot for seed, 1879, A., 822.
- manuring of beetroot, 1880, A., 137.
- Vieaire, E.**, on the theory of sun spots and on the dark nucleus of the sun, 1873, 838.
- Vidal, Léon**, polychromic photography, 1873, 1267.
- Vidau, Victor Alfred**, reactions of saccharine matters, 1876, i., 111.
- action of sodium sulphide on silver nitrate, 1876, i., 747.
- potassium cuprocyanide and potassium palladiocyanide, 1877, i., 456.
- Videky, L.**, asphalt, its extraction, preparation and uses, 1873, 660.
- Viedt, C. H.**, black writing inks, 1876, i., 821; 1877, i., 123.
- walnut colour for light wood, 1876, i., 823.
- Vieille, Paul**, nitration of cellulose, 1882, A., 1184.
- Vieille, Paul**. See also **Marcellin Berthelot**, **Emile Sarrau**.
- Vielhaber, H. C.**, use of phenolphthalein in titration, 1879, A., 273.
- estimation of hydrocyanic acid in bitter almond water, 1879, A., 280.
- Vienne, G.**, and **Ignatius Steiner**, preparation of *m*-toluidine, 1881, A., 721.
- Vieth, Paul**,  $\beta$ -naphthoic acid, 1876, ii., 86.
- estimation of fat in milk, 1880, A., 761.
- Vieth, Paul**. See also **Wilhelm Fleischmann**.
- Vigier, Ferdinand**, and **Charles Cloëz**, oil of *Erigeron canadensis*, 1881, A., 1151; 1882, A., 64.
- Vignou, Léo**, the rotatory power of mannite, 1874, 245.
- researches on mannite, 1875, 52.
- Vignon, Léo**, and **J. Bous Boasson**, two new dye stuffs, 1880, A., 717.
- Villargeau**. See **Yvon-Villargeau**.
- Villari, Emilio**, on the electromotive force of palladium in the gas-battery, 1875, 123.
- thermic and galvanometric laws of the electric spark, 1879, A., 576.
- thermic laws of the discharge spark of a condenser, 1882, A., 447, 678.
- Ville, Georges**, quick estimation of phosphoric acid, magnesia, and lime, 1873, 292; 1875, 285.
- experimental researches on vegetation, 1875, 376.
- Ville, Jules**, the presence of tannin in gentian root, 1877, ii., 897.
- ferruginous carbonated waters, 1881, A., 1112.
- Ville, Jules**. See also **Rodolphe Charles Engel**.
- Villiers, Antoine**, researches on melezitose, 1877, i., 451.
- a new series of acid salts, 1877, ii., 428.
- acid acetates, 1878, A., 25, 289.
- analysis of honey from Ethiopia, 1879, A., 450.
- crystallised oxalic acid, 1880, A., 541.
- etherification of haloid acids, 1880, A., 711; 1881, A., 32.
- etherification of sulphuric acid, 1880, A., 796.
- preparation of neutral ethyl sulphate, 1880, A., 797.
- tetranitroethylene bromide, 1882, A., 815.
- Villiers, Antoine**. See also **Charles Tanret**.
- Vilmain, G.** See **Rodolphe Charles Engel**.
- Vilmorin, H.**, cultivation of beet-root, 1880, A., 821.
- Vincent, Camille**, new mode of formation of methylamine, 1873, 498.
- production of methylamine in methyl alcohol, 1874, 150.
- products of the dry distillation of the "vinasse" from beet-root molasses, 1877, ii., 240, 379; 1879, A., 612; 1880, A., 233.
- reactions of an aqueous solution of trimethylamine upon metallic solutions, 1877, ii., 358.



- Vincent, Camille**, decomposition of hydrochloride, hydrobromide, and hydriodide of trimethylamine by heat, 1878, A., 25.
- decomposition of trimethylamine hydrochloride by heat, 1878, A., 400.
- distillation of beet-root residues, 1879, A., 913.
- sorbin and sorbite, 1881, A., 148.
- benzhydryl acetate, 1881, A., 596.
- thiocarbonates of potassium and other metals, 1881, A., 855.
- Vincent, Camille**, and **Bénédict Delachanal**, the more volatile products obtained from crude benzin (from petroleum ?), 1878, A., 392.
- density and coefficient of expansion of liquid methyl chloride, 1879, A., 294.
- some properties of mixtures of methyl cyanide with ethyl and methyl alcohols, 1880, A., 524.
- combination of allyl alcohol with baryta, 1880, A., 794.
- Vines, Sydney Howard**, on the chemical aspect of vegetable physiology, 1878, T., 375.
- chemical composition of aleurone-grains, 1880, A., 483; 1881, A., 1062.
- Vintschgau, Maximilian (Ritter) von**, and **Michael J. Dietl**, action of warm potash solution on glycogen, 1876, ii., 622.
- action of potash solutions on glycogen, 1878, A., 850.
- Violette, Henri**, fusion of platinum in a small wind-furnace, 1873, 477.
- Violle, Jules**, specific heat and latent heat of fusion of platinum, 1878, A., 106.
- specific heat and latent heat of fusion of palladium, 1879, A., 294.
- radiation from incandescent platinum, 1879, A., 573.
- specific heats and melting points of the refractory metals, 1880, A., 149.
- intensity of the luminous radiation from incandescent platinum, 1881, A., 669.
- diffusion of carbon, 1882, A., 358.
- boiling point of zinc, 1882, A., 697.
- Viollette, Charles**, on a compound of sugar and potassium chloride, 1873, 611.
- raw sugar of the third produce, and the commercial analysis of the same, 1873, 957.
- the purification of hydrogen gas, 1874, 221.
- distribution of sugar and mineral matters in the beet root, 1875, 376.
- Viollette, Charles**, determination of the ratio of the actual ash to the sulphated ash in the products of the sugar industry, 1875, 384.
- Virchow, Carl**, scientific methods of estimating the value of meat, 1882, A., 676.
- Vitali, Dioscoride**, detection of picric acid in beer, 1877, ii., 232.
- on blood stains, 1880, A., 926.
- new colour reactions of morphine, codeine, and atropine, 1882, A., 340.
- new method of testing for chloroform in cases of poisoning, 1882, A., 777.
- Vivien, A.**, process for estimating the alkalinity of juice in the sugar factory, 1873, 1060.
- Voelcker, Johann Christoph August**, analyses of manures and of cattle foods, 1873, 766; 1874, 706; 1876, i., 956; 1877, ii., 637; 1880, A., 678.
- pure and mixed linseed cake, 1873, 767.
- Australian concentrated mutton soup as a food for pigs, 1874, 175.
- on the composition of drainage waters, 1874, 707.
- field experiments on permanent pasture, 1875, 98.
- composition of new Peruvian guanos, 1875, 98.
- composition of phosphatic minerals used in agriculture, 1876, i., 200.
- phosphatic guanos, 1877, i., 733.
- bats' guano from various sources, 1878, A., 741; 1880, A., 345.
- four-yearly rotation of crops, 1880, A., 185; 1881, A., 639; 1882, A., 1225.
- comparative value of soluble and insoluble phosphates, 1880, A., 678; 1881, A., 640.
- fattening of oxen, 1881, A., 116.
- continuous cropping of wheat and barley, 1881, A., 638; 1882, A., 329.
- composition of cream and skim milk from de Laval's centrifugal separator, 1881, A., 771.
- composition of ewes' and goats' milk, 1882, A., 511.
- report on field and feeding experiments at Woburn in 1880, 1882, A., 649.
- continuous growth of wheat and barley at Woburn in 1881, 1882, A., 1226.
- action of soluble and insoluble phosphates on swedes, 1882, A., 1228.
- manuring experiments with soluble and insoluble phosphates, 1882, A., 1215.

- Völker, Ottomir**, analysis of syngenite, a new mineral from Kalusz in Galicia, 1873, 254.
- analysis of a furnace product containing magnetic iron oxide, 1873, 254.
  - ethylpropylcarbinol, 1876, i., 369.
  - Maxwell Simpson's synthesis of acrolein from diiodacetone, 1878, A., 780.
- Voeller, Fritz.** See **Adolph Claus.**
- Völtzkow, Max**, phenyl- and tolyl-thiocarbimide glycollides, 1881, A., 43.
- Voltzkow, Max.** See also **Adolph Claus**, **Carl Theodor Liebermann.**
- Vogel, August**, spontaneous disintegration of lead and bismuth alloys, 1873, 603.
- the light emitted by leaves, 1873, 647.
  - presence of bile acids in normal urine, 1873, 928.
  - arsenic in green-tinted envelopes, 1873, 943.
  - reaction of milk with litmus, 1873, 1048; 1874, 278.
  - examination of English chalk, 1874, 136.
  - sugar in asparagus, 1874, 176.
  - relation of the camphor\* group to plant life, 1874, 177.
  - occurrence of chromium in platinum, 1874, 196.
  - the effect of absolute alcohol in some chemical reactions, 1874, 708.
  - a test for narcine, 1874, 1183.
  - detection of nitric acid in potable water by gold purple, 1876, i., 744.
  - hop testing, 1876, i., 780.
  - on the nitrogenous constituents of malt extract, 1876, i., 943.
  - ash of various parts of a plant, 1881, A., 837.
- Vogel, Hans**, "Schrotbrod," 1873, 424.
- analysis of milk, 1880, A., 828.
- Vogel, Hermann Carl**, absorption of the chemically active rays in the sun's atmosphere, 1873, 712.
- Vogel, Hermann Wilhelm**, on dry plate photography and sensibilisers, 1873, 424.
- sensibility of haloid silver salts to light under alkaline development, 1873, 948.
  - sensibility of silver bromide for the so-called chemically inactive rays, 1874, 217.
  - use of the magic lantern for physico-chemical lecture experiments, 1874, 218.
  - on Becquerel's continuing rays, 1874, 332.
- Vogel, Hermann Wilhelm**, variations in the chemical action of the solar spectrum, and an apparatus for measuring them, 1874, 424.
- the chemical action of the solar spectrum on the haloid salts of silver, 1874, 756; 1875, 326.
  - the relations between absorption, anomalous dispersion, and the chemical action of the solar spectrum, 1874, 1121.
  - on the spectrum of Sell's bisulphide of carbon lamp, 1875, 603.
  - abnormal action of many colouring matters on the susceptibility to light of photographic plates, 1875, 604.
  - on the chemical action of light on pure and coloured silver bromide, 1876, i., 510.
  - on the absorption spectra of salts of the metals of the iron-group, and their use in analysis, 1876, i., 739.
  - new observations on the susceptibility to light of silver bromide, 1876, ii., 265.
  - spectroscopy of the colouring matters of blood, 1877, i., 331.
  - a delicate spectroscopical reaction for alumina and magnesia, 1877, i., 742.
  - spectroscopical notices, 1877, ii., 269, 915.
  - adulteration of wine, 1877, ii., 372.
  - detection of carbon monoxide, 1877, ii., 640; 1878, A., 417.
  - Chastaing's new theory of the chemical action of light, 1878, A., 3.
  - variations in the absorption spectra of colouring matters, 1878, A., 345.
  - universal spectroscope, 1878, A., 829.
  - alizarin colouring matters and green aniline colours, 1879, A., 83.
  - difference in the absorption spectra for one and the same substance, 1879, A., 189.
  - photographed spectra of oxygen and hydrogen, 1879, A., 497.
  - new hydrogen lines and the dissociation of calcium, 1880, A., 597.
  - photochemical behaviour of silver bromide in presence of gelatin, 1880, A., 837.
  - sensitiveness of silver bromide dry plates for different portions of the solar spectrum, 1881, A., 773.
- Vogler, H.**, composition of commercial ammonium carbonate and of the product formed on exposing it to air, 1879, A., 354.
- Vogt, Carl.** See **Denis Monnier.**

- Vogt, E.**, occurrence of morphine in the excreta, 1876, i., 280.
- Vogt, Georges**, and **Arthur Henninger**, lutorinol, an isomeride of oreinol, 1882, A., 729.
- Vohl, Edward Hermann Ludwig**, zinc beer coolers, 1873, 958.
- the nitro-compounds of inosite, 1874, 463.
- soaps used in the textile industries, 1874, 499.
- quantitative determination of chlorine, nitrogen oxides, and ferrous oxide in commercial iron mordant, 1874, 603.
- on fish-manure, and on 'steamed' guano, free from fat, 1876, i., 135.
- on the lactic acid from inosite, 1876, ii., 400.
- composition of the ochre deposit from the mineral water of Birresborn, 1876, ii., 494.
- detection of sulphur in organic compounds, 1876, ii., 552.
- carbonic acid springs of the Kyll-Thal (Eifel), 1877, i., 448.
- detection of foreign mineral substances in flour, 1877, i., 753.
- determination of impurities in river and well waters, 1877, ii., 919.
- a new mineral spring near Pelm in the Kyll-Thal (Eifel), 1878, A., 559.
- composition of the Birresborn and Gerolstein mineral springs at Pelm, in the Eifel, 1878, A., 714.
- analysis of the spring water of Marpingen, Alswelier, Trèves, 1878, A., 714, 843.
- mineral spring "Marienbrunnen" near Iserlohn, Westphalia, 1879, A., 211.
- Ofner-Rákóczy-bitterwater, 1879, A., 211.
- Voigt, Woldemar**, numerical value of the constants in Weber's formula, 1878, A., 465.
- Voigts-Rhetz, von**. See **Dünkelberg**.
- Voit, Carl von**, value of gelatigenous tissues in nutrition, 1873, 284; 1875, 91.
- separation of sal-ammoniac in urine, 1877, ii., 206.
- conversion of uric acid into urea in the body of the dog, 1878, A., 444.
- deportment of the shells of hens' eggs during incubation, 1878, A., 525.
- influence of the temperature of the surrounding air on the processes of decomposition in the organism of warm blooded animals, 1879, A., 75, 951.
- Voit, Carl von**, and **Joseph Bauer**, the amount of metamorphosis of albumin after blood-letting, 1873, 288.
- Voit, Carl von, Ernst Voit**, and **Josef Forster**, determination of water by means of Pettenkofer's respiration apparatus, 1876, i., 960.
- Voit, Carl von**. See also **Max Josef von Pettenkofer**.
- Voit, Erwin**, the changes undergone by meat in the process of pickling, 1881, A., 66.
- importance of lime to the animal organism, 1881, A., 190.
- Voit, Erwin**. See also **Ludwig Feder**.
- Volger, A.**, naturally occurring salts and especially lüneburgite, 1874, 671.
- Volhard, Jakob**, glycolylsulphurea, 1873, 880.
- cyanamide, 1874, 463.
- sulphurea and guanidine, 1874, 464.
- derivatives of sulphurea, 1874, 574.
- volumetric estimation of silver, 1874, 919.
- formic aldehyde and methylic formate, 1875, 876.
- use of ammonium thiocyanate in volumetric analysis, 1878, A., 743.
- estimation and separation of manganese, 1880, A., 141.
- Volkhausen, L.** See **Carl Engler**.
- Volkmann, Paul**, expansion of water by heat, 1882, A., 135.
- Volkmer, Ottomar**, analysis of andesite from Czilldes in the Gutin range of North Transylvania, 1873, 1211.
- Voller, Carl August**, change in the electromotive force of galvanic couples by heat, 1874, 219.
- Volpicelli, Paolo**, on the electric balance and an electrostatic phenomenon, 1873, 839.
- Volta, Alessandro**, action of ozone on some noble metals, 1880, A., 205.
- Volta, Alessandro**. See also **Carlo Giannetti**.
- Vongerichten**. See **Gerichten**.
- Vorster, Fr.**, the chemical function of the Glover tower in the sulphuric acid manufacture, 1875, 484.
- Vorster, Julius**, preparation of phosphorite, 1880, A., 356.
- Vorster, Julius**. See also **Hermann Grüneberg**.
- Vortmann, Georg**, on certain ammonio-cobaltic compounds, 1877, ii., 845; 1879, A., 438.
- detection of chlorine in presence of iodine and bromine, 1880, A., 509.
- estimation of chlorine in presence of iodine and bromine, 1880, A., 509; 1882, A., 1230.

- Vortmann, Georg.** See also *Eduard Lippmann, Stanislaw Natanson, Zdenko Hanns Skraup.*
- Vrau, G.** See *A. Bleunard.*
- Vrba, Karel,** analyses of syngenite from Kalusz in Galicia and identity of kalnszite with syngenite, 1873, 852.
- contributions to the knowledge of the South Greenland rocks, 1874, 967.
- friscite a mineral resembling sternbergite, 1878, A., 942; 1881, A., 689.
- cerussite from Rodna in Transylvania, 1878, A., 942.
- mineralogical notices, 1882, A., 574.
- Vries, Hugo de,** certain bye-products of plant development, 1882, A., 761.
- Vrij, Johan Eliza de,** analysis of some cinchona barks grown in Jamaica, 1874, 88.
- analysis of some cinchona barks, cultivated at Ootacamund, 1874, 89, 1002.
- the separation of the mixed alkaloids from cinchona barks, 1874, 95.
- the amorphous alkaloid in cinchona barks, 1874, 588.
- quinamine, 1874, 588.
- Javanese *Cinchona Calisaya* bark, 1875, 184.
- East Indian cinchona bark, 1876, i., 423.
- iodosulphate of quinoidine as a reagent for the determination of quinine, 1876, i., 964.
- sulphate of quinidine, 1878, A., 588.
- the form in which the cinchona alkaloids occur in the bark, 1880, A., 598.
- quinoidine borate a new febrifuge, 1881, A., 1154.
- *Thevetia nerifolia*, 1882, A., 328.
- quantitative estimation of quinine, 1882, A., 560.
- method for estimating the total alkaloids in barks, 1882, A., 665.
- Vulpus, Gustav,** reduction of platinum, 1876, i., 192.
- employment of bromine in analysis, 1876, i., 742.
- ozone developer, 1878, A., 813.
- solubility of phosphorus in acetic acid, 1878, A., 834.
- on chloroform, 1878, A., 844.
- on gummy degeneration of almonds, 1878, A., 904.
- solubility of sulphur and phosphorus, 1879, A., 104.
- mechanical purification of mercury, 1879, A., 125.
- salicylates and their application, 1879, A., 641.

- Vulpus, Gustav,** formation of mercuric from mercurous chloride, 1879, A., 889.
- detection of paralbumin, 1880, A., 829.
- *Liquor aluminii acetici*, 1882, A., 943.
- solvents for iodoform, 1882, A., 1013.
- remarkable behaviour of quinine hydrochloride, 1882, A., 1113.
- Vyvere, E. van de,** action of water containing air on lead, 1876, i., 342.

## W.

- W., H.** See *H., W.*
- Waage, Peter,** the ebullioscope, 1879, A., 1065.
- Waage, Peter.** See also *Otto Mari-milian Guldberg.*
- Waes, Eugen,** action of dichlorethyl oxide on benzene in presence of aluminium chloride, 1882, A., 1209.
- Wachendorff, Carl,** nitrobenzyl chloride, 1876, i., 80.
- haloil derivatives of the nitro-toluenes, 1877, i., 207.
- urethanebenzoic acid, 1878, A., 674.
- Wachendorff, Carl,** and *Ernst Carl Theodor Zincke,* styrolene alcohol (*phenyl glycol*), 1877, ii., 614.
- methyl derivatives of anthracene, 1878, A., 232.
- Wachsmuth, O.,** on the strength of ammonia solution, 1876, ii., 477.
- Wachtel, A. von,** adulteration of bone meal with phosphoric, 1880, A., 516.
- gypsum in the manufacture of sugar, 1880, A., 834.
- *Sorghum saccharatum*, 1880, A., 932.
- substitute for animal charcoal, 1882, A., 1016.
- method of obtaining sugar from molasses, 1882, A., 1146.
- Wachter, H.** See *Julius Nessler.*
- Wackenroder, B.,** apparatus for the quantitative estimation of carbonic anhydride in gases, 1873, 1053.
- Wächter, Friedrich,** relation between the atomic weights of the elements, 1878, A., 468.
- on the velocity of molecules, 1878, A., 612.
- Wächter, Friedrich.** See also *Edmund Reitlinger.*
- Wälchli, Gustav,** putrefaction of elastin and mucin, 1878, A., 591.
- Wagener, G.,** rule for calculating the composition of glass, and on the nature of glass, 1882, A., 563.



- Wagener, G.**, glass mixtures and the application of natural silicates in the manufacture of glass, 1882, A., 1245.
- Wagner, August**, influence of various solutions on the rusting of iron, 1876, i., 522.
- the action of different solutions on metals, 1876, ii., 600.
- reduction of carbonic anhydride to carbonic oxide by red hot stannous oxide, 1880, A., 574.
- formation of nitric oxide by the ignition of nitre, 1880, A., 574.
- analysis of gunpowder, 1881, A., 193.
- determination of ash in coal and coke, 1881, A., 196.
- limits of error in analyses of combustion gases, 1881, A., 205.
- analysis of manganese dioxide, 1882, A., 555.
- tests for ferric and cupric salts, 1882, A., 556.
- water analysis, 1882, A., 556.
- tests for nitrates in potable waters, 1882, A., 556.
- sulphur in zinc dust, 1882, A., 670.
- decomposition of nitrous and nitric oxides by heat, 1882, A., 1317.
- Wagner, Georg**, action of zinc ethyl on aldehydes, 1876, ii., 395.
- general method of preparing secondary alcohols, 1882, A., 376.
- action of zinc ethyl and methyl on chlorinated aldehydes, 1882, A., 377.
- note on Popoff's law of the oxidation of ketones, 1882, A., 594.
- Wagner, Georg, and Alexander M. Saytzeff**, new synthesis of alcohols, 1874, 348.
- synthesis of diethylecarbinol, a new isomeride of amyl alcohol, 1875, 627.
- amylene dibromide and amylene glycol from diethylecarbinol, 1876, i., 547.
- Wagner, Georg**. See also *Carl Arnold August Michaelis*.
- Wagner, H.**, use of water-glass in building, 1873, 540.
- Wagner, J.**, regeneration of spent albumin by means of pepsin, 1876, ii., 229.
- Wagner, J.**, a means of protecting alizarin from the action of iron, 1876, ii., 234.
- a reaction for distinguishing alizarin from extract red, 1876, ii., 328.
- Wagner, J. S.**, chevalier barley, 1882, A., 549.
- Wagner, Johannes Rudolf von**, a revolution in the soda manufacture, 1874, 194.
- manufacture of Glauber's salt glass, 1875, 1059.
- technical uses of salicylic acid, 1876, i., 460.
- use of bromine in hydrometallurgy, assaying, and chemical technology, 1876, i., 741; ii., 214.
- removal of arsenic from sulphuric acid, 1876, ii., 48, 122.
- the coloured resorcin derivatives, 1876, ii., 82.
- resorcin-black, 1876, ii., 233.
- the detection of eosin on dyed fabrics, 1876, ii., 328.
- conversion of chromium oxide into chromic acid in the wet way, 1878, A., 618.
- detection of cellulose by means of phloroglucin, 1878, A., 809.
- noumeaite, a new jewel, 1879, A., 184.
- dephosphorisation of pig iron, 1880, A., 593.
- Wagner, Paul**, action of alkalis on isomeric nitramines, 1874, 481, 808.
- nitrocresol, 1875, 256.
- Knop's azotometer modified, 1875, 664.
- influence of the physical condition of superphosphate on its value, 1880, A., 60.
- beetroot, 1880, A., 495.
- estimation of fat in fodder, 1880, A., 762.
- manuring experiments, 1880, A., 922.
- Wagner, Paul, and R. Hercher**, employment of ammonium citrate in examination of phosphates in manure, 1881, A., 846.
- Wagner, Paul, and Hugo Prinz**, manuring of vines, 1881, A., 121.
- Wagner, Paul, and Wilhelm Rohn**, experiments on the manuring of barley, 1880, A., 135.
- on the quantities of acid and sugar in grapes cut at various stages of their growth, 1880, A., 179.
- potato culture, 1880, A., 919.
- Wagner, Paul, and Carl Stünkel**, experiments on the manuring of vines, 1882, A., 1129.
- Wagner, Paul**. See also *Carl Osterland, Carl Stünkel*.
- Wagner, Richard**, estimation of proteins in fodder, 1880, A., 588.
- Wagner, Richard, and Bernhard Tollens**, allyl cyanocarbonate, 1873, 381.

- Wagner, *Richard*, and *Bernhard Tolens*, a hydrate of parabanic acid, 1873, 759.
- diallyl, and attempts to prepare allylbenzene, 1873, 1122.
- $\beta$ -monobromacrylic acid from  $\beta$ -dibromopropionic acid, 1873, 1220; 1874, 680.
- acryl colloids, 1874, 681.
- Wagner, *Richard*. See also *Heinrich Albert*, *Adolph Emmerling*.
- Wagner, *Wilhelm*, salicylic acid as a disinfectant, 1875, 776.
- Waine, *G. W.*, composition of ferric phosphate, 1877, ii., 844.
- Wait, *Charles Edward*, analysis of novaculite or "Ouachito whetstone" from Arkansas, 1874, 346.
- analysis of bournonite, 1874, 316.
- Wald, *F.*, studies and dynamical chemical processes, 1882, A., 5.
- Wald, *Heinrich*, diazobromobenzene and nitroethane, 1876, ii., 92.
- azo-compounds of diphenyl, 1876, ii., 417; 1877, ii., 341.
- Waldack, *Charles L.* See *J. D. Rottier*.
- Waldbaur, *Adolf*. See *Carl Hell*.
- Walder, *Hans Jakob*. See *Carl Theodor Liebermann*, *Wilhelm Michler*.
- Waldner, manuring experiments on moor-land, 1880, A., 923.
- Waldschmidt, *Ernst*,  $\alpha$ -ethyl- $\beta$ -oxybutyric acid and ethylcrotonic acid, 1878, A., 136.
- Waldstein, *Martin Edward*, benzhydroxamic ether, 1876, ii., 526.
- Waldstein, *Martin Edward*. See also *Carl Theodor Liebermann*.
- Walitzky, *W. E.*, derivatives of cholesterol, 1877, i., 58; 1879, A., 135.
- action of aniline, toluidine, and naphthylamine on cholesteryl chloride, 1879, A., 376.
- cholestene (*cholesterilene*), 1881, A., 401.
- terpin, 1882, A., 411.
- Walker, *David*, action of carbon disulphide on the hydrates of calcium, barium, magnesium, and zinc, 1874, 1135.
- Wall, *E.* See *Victor Merz*.
- Wallace, *Roger William*, and *Carl Friedrich Claus*, application of gas liquor to the production of potassium carbonate and other salts, 1879, A., 677.
- Wallace, *William*, composition of the mortar of the pyramid of Cheops, 1874, 928.
- a peculiar water, 1880, A., 591.
- Wallace, *William*, condition in which sulphur exists in coal, 1880, A., 708.
- heating powers of coal-gas of different qualities, 1880, A., 766.
- chemistry of sewage precipitation, 1881, A., 662.
- Wallach, *M.*, *isohydrobenzoin* carbonate, 1882, A., 853.
- Wallach, *Otto*, action of potassium cyanide on chloral; a new method for the preparation of dichloroacetic acid, 1873, 627.
- methods for the production of non-oxygenised bases, Part I., 1874, 984.
- on a new sulphur derivative of prussic acid, 1874, 1086.
- chloral, 1875, 349.
- action of potassium cyanide on chloraldehydes, 1875, 351.
- action of phosphorus pentachloride on acid amides, 1875, 883; 1877, ii., 182.
- separation of the ethyl bases by ethyl oxalate, 1875, 1187.
- action of potassium cyanate on chloral hydrate, 1876, i., 376.
- chloralide and its derivatives, 1876, i., 551; 1879, A., 43.
- amidines, 1876, i., 605.
- preparation of dichloroacetic acid, 1877, i., 59.
- action of chloral and bromal on oxy-acids, 1877, i., 59.
- action of phosphorus pentabromide on amides, 1877, i., 68.
- action of phosphorus pentachloride on acetoluidide, 1877, i., 91.
- mode of action of hydrocyanic acid, 1878, A., 285.
- certain reactions of chloral, 1878, A., 288.
- organic thio-compounds, 1879, A., 312.
- remarks on his papers on the relation between the bases of the oxalic series and some of the alkaloids, 1880, A., 548.
- thiamides, 1880, A., 556.
- dichloroacrylic acid, 1880, A., 799.
- derivatives of pyromucic acid, 1881, A., 714.
- substituted oxamides, formamides and diethyloxamic acid, 1881, A., 717.
- action of phosphorus pentachloride on diphenylacetamide and diphenylbenzamide, 1882, A., 394.
- azo-colouring matters, 1882, A., 609.
- oxaline and glyoxaline, 1882, A., 821.
- formation of bases from acid amides, 1882, A., 958.

- Wallach, Otto**, and **Ludwig Belli**, conversion of azoxybenzene into oxyazobenzene, 1880, A., 556.
- Wallach, Otto**, and **O. Bischof**, monochloroacetylene, 1878, A., 653.
- decomposition of dichloroacrylic acid by alkalis, 1879, A., 453.
- Wallach, Otto**, and **Hermann Bleibtren**, thio-derivatives, 1879, A., 786.
- Wallach, Otto**, and **Ad. Boehringer**, action of potassium cyanide on crotonic chloral, 1874, 461.
- methods for the production of non-oxygenised bases. Part II., 1875, 565.
- Wallach, Otto**, and **Ludwig Claisen**, on the oxidation of some nitrogenous organic compounds, 1876, i., 575.
- Wallach, Otto**, and **Arthur Gossmann**, acid imidochlorides and amidines, 1878, A., 669.
- Wallach, Otto**, and **Th. Heymer**, on phenylated phosphoric acids, 1876, i., 263.
- Wallach, Otto**, and **Meinhard Hoffmann**, action of phosphorus pentachloride on the substituted amides of monobasic acids, 1875, 1031; 1876, i., 604.
- action of phosphorus pentachloride on benzanilide, acetanilide and acetethylamine, 1877, ii., 187.
- Wallach, Otto**, and **Paul Hunaeus**, chlorinated acrylic acids, 1877, ii., 591.
- Wallach, Otto**, and **Theodor Huth**, action of phosphorus pentachloride on the amides of sulpho-acids, 1875, 1026; 1876, ii., 97.
- Wallach, Otto**, and **Iwan Kamenski**, formation of bases from acid amides, 1880, A., 547.
- amidine bases from dibasic acids, 1881, A., 284.
- Wallach, Otto**, and **Ludwig Kiepenheuer**, conversion of azoxybenzene into oxyazobenzene, 1882, A., 394.
- Wallach, Otto**, and **Adolf Liebermann**, action of alcohols and phenols on acid imidochlorides, 1880, A., 557.
- Wallach, Otto**, and **Franz Oppenheim**, on the bases  $C_nH_{2n-2}ClN_2$ , 1878, A., 55.
- Wallach, Otto**, and **Peter Pirath**, thioamides of the oxalic acid series, 1879, A., 784.
- Wallach, Otto**, and **J. Reincke**, tribromolactic acid, bromalide and  $\beta$ -monobromacrylic acid, 1878, A., 403.
- Wallach, Otto**, and **Ernst Schulze**, bases of the oxalic acid series, 1880, A., 547; 1881, A., 572.
- Wallach, Otto**, and **G. Stricker**, oxal ethylene and chloroxalallylene, 1880, A., 546.
- Wallach, Otto**, and **Paul West**, ethyl- and methyl-oxamethanes, 1876, ii., 184.
- Waller, C. Jakob**, analysis of demantoid from the Urals, 1881, A., 697.
- Waller, Elwyn**, testing of phenol, 1881, A., 655.
- Wallin, Karl**. See **Johan Peter Glaesson**.
- Waltenhofen, Adalbert von**, a new form of Noé's thermoelectric battery, 1873, 465.
- magnetic behaviour of finely divided iron, 1879, A., 1000.
- Walter**, mechanical explanation of the varying quantivalence of nitrogen, phosphorus, etc., 1874, 221.
- Walter, Johann**. See **Carl Graebe**.
- Walter, Konrad**, on manure phosphates, 1882, A., 770.
- Walton, (Miss) Evelyn M.**, liquefaction and cold produced by the mutual action of solids, 1882, A., 450.
- Walton, Jonathan Sparke**, obituary notice of, 1882, T., 238.
- Walton, Thomas Ulrick**. See **Edmund James Mills**.
- Waltz, Gustav**, propyl- and isopropyl-succinic acids, 1882, A., 948.
- Walz, Isidor**, action of chromium trioxide on iodine, 1873, 141.
- cleansing of laboratory vessels, 1873, 1276.
- researches on the theory of solubility, 1875, 1157.
- Wanklyn, James Alfred**, fractional distillation, 1873, 345.
- porous filters, 1873, 952.
- note on the Nessler test, 1873, 1055.
- beech leaves, 1874, 86.
- tea, 1874, 86.
- variations in the composition of river waters, 1876, i., 357.
- on the action of certain kinds of filters on organic substances, 1876, ii., 554.
- detection of alum in bread and flour, 1877, i., 231.
- Wanklyn, James Alfred**, and **William John Cooper**, on a method of determining the amount of protein compounds in vegetable substances, 1878, A., 247.
- water analysis: determination of cellulose and modified cellulose in drinking water, 1878, A., 754.

- Wanklyn, James Alfred**, and **William John Cooper**, direct method for determining the calorific power of alimentary substances, 1878, A., 1013.
- the moist combustion process; some reactions of alkaline permanganate of potassium, 1879, A., 555.
- products of the oxidation of wool; cyanopropionic acid, 1880, A., 460.
- new apparatus for use in gas analysis, 1881, A., 939.
- Wanstrat, Richard**, derivatives of salicylic acid, 1873, 906.
- thiamides, 1873, 909.
- Warden, Charles James Hislop**, analysis of mud taken at low water from the Mer-rouge, Mauritius, 1875, 1170.
- analysis of Behar opium ash, 1878, A., 1000.
- composition of the ash of poppy petals, 1879, A., 395.
- *Gloriosa superba*, 1881, A., 103.
- analysis of forage biscuits, 1881, A., 637.
- blue colouring principle of *Thevetia nereifolia*, 1882, A., 308.
- note on a filtering syphon for the separation of ether, etc., 1882, A., 771.
- presence of a second poisonous principle in *Thevetia nereifolia*, 1882, A., 1126.
- Warder, Robert Bowne**, on phenyleneurea, 1876, i., 400.
- alkalimetry with phenolphthalein as an indicator, 1881, A., 848.
- Wroblewski's remarks on benzene formulæ, 1882, A., 1196.
- Warington, George**, obituary notice of, 1874, 1203.
- Warington, Robert**, decomposition of tricalcic phosphate by water, 1873, 983.
- some of the effects of cropping on the subsequent condition of the soil, 1874, 184.
- effect of manures on the subsequent condition of the soil, 1874, 287.
- notes on the chemistry of tartaric and citric acids, 1875, 925.
- determination of carbonic acid with Scheibler's apparatus, 1875, 1049.
- determination of nitric acid by indigo, 1877, i., 735.
- nitrification, 1878, T., 44; 1879, T., 429.
- on the determination of nitric acid as nitric oxide by means of its action on mercury, 1879, T., 375.
- Warington, Robert**, on the determination of nitric acid by means of indigo, with special reference to water analysis, 1879, T., 578.
- on the determination of nitric acid as nitric oxide, by means of its reaction with ferrous salts, 1880, T., 468; 1882, T., 345.
- note on the appearance of nitrous acid during the evaporation of water, 1881, T., 229.
- on the determination of nitric acid in soils, 1882, T., 351.
- alteration of the nitric ferment by cultivation, 1882, A., 79, 1223.
- Warington, Robert**, and **William Henry Aston Peake**, on the determination of carbon in soils, 1880, T., 617.
- Warington, Robert**. See also (*Sir*) **John Bennett Lawes**.
- Warner, George Joseph**, on the reduction of sulphuric acid by hydrogen, 1873, 1002.
- zinc-magnesium chloride, 1874, 24.
- Warnerke, Leon**, emulsion collodion and the influence of different bromides, 1876, ii., 232.
- Warren, Joseph W.**, influence of tetanus on the acids contained in muscle, 1882, A., 539.
- Warth, Constantin**. See **Werner Kelbe**.
- Wartha, Vincze**, convenient gas-generators, 1873, 132.
- Nienhaus's coffee extract, 1874, 300.
- preliminary notice on constant normal flames, 1874, 432.
- the formulation of silicates, 1874, 414.
- colouring matter of litmus, 1876, i., 939.
- a peculiar kind of steam boiler corrosion, 1876, ii., 219.
- influence of pressure on combustion, 1876, ii., 376.
- preliminary note on the analysis of the Zsadány meteorite, 1879, A., 210.
- hectograph and chromograph, 1879, A., 836.
- analysis of wine, 1880, A., 680.
- method for determining the temporary hardness of water, 1880, A., 923.
- on an explosion produced while heating wine, and a new process for the estimation of alcohol, 1881, A., 479.
- detection of sulphurous acid in wine, 1882, A., 1231.



- Wartha, *Vincze*. See also *Alois Schuller*.
- Washburne, *W. P.*, estimation of the total nitrogen in urine, 1876, ii., 668.
- Wasilewsky, *S.*, chemico-legal determination of *Hyoscyamus niger*, *Datura Stramonium* and *Atropa Belladonna*, 1877, ii., 934.
- Wasowicz, *Mieczyslaw Dumin von*, the coloration of peppermint oil by chloral hydrate, 1878, A., 344.
- examination of flour, 1878, A., 348.
- Verryken's method of detecting metallic poisons, 1879, A., 973.
- Wassermann, *Max*, the relative constitution of eugenol, 1876, i., 706.
- derivatives of methyleugenol, 1879, A., 790.
- Wassilieff. See *Alexander Popoff*.
- Wasum, *A.*, influence of sulphur and copper on the working properties of steel, 1882, A., 1246.
- Waterhouse, *James*, photographic action of eosin, 1876, ii., 232.
- Waters, *William Horscraft*. See *Charles Hanson Greville Williams*.
- Watson, *George*, a new catalytic reaction, 1882, A., 1262.
- Watson, *William Henry*, analysis of a chalybeate water from a spring at Sellafeld, near Whitehaven, 1875, 1169; 1876, i., 890.
- action of Nessler test on rain-water, 1875, 1288.
- action of various fatty oils on copper, 1878, A., 473.
- notes on the effect of alcohol on saliva, and on the chemistry of digestion, 1879, T., 539.
- detection of milk adulteration, 1879, A., 1068.
- action of oils on metals, 1881, A., 772.
- Watt, *Alexander*, specific rotatory power of cane and invert sugars, 1881, A., 651.
- Wattenberg, *H.*, estimation of soluble phosphoric acid in superphosphates, 1879, A., 672.
- Wattenberg, *H.* See also *Johann Wilhelm Julius Henneberg*.
- Watts, *Charles W.*, and *Chichester Alexander Bell*, preparation of metallic chlorides, 1878, T., 442.
- Watts, *Francis*, analysis of iron and steel with special reference to the estimation of carbon and silicon, 1882, A., 1134.
- Watts, *John Isaac*. See *Bohuslav Brauner*, *Thomas Edward Thorpe*.
- Watts, *William Marshall*, spectrum of the Bessemer flame, 1873, 461.
- on the spectrum of carbon, 1875, 327.
- Wayne, *E. S.*, researches on buchu, 1876, ii., 207.
- Webber, *H. C.* See *Charles Frederic Mabery*.
- Weber, *Adolf*, derivatives of dimethylaniline, 1875, 1200.
- dihydroxynaphthalene, 1882, A., 205.
- Weber, *Adolf*, and *Rudolf Heim*, preparation of aromatic ethereal salts of phosphoric acid, 1882, A., 839.
- Weber, *Adolf*. See also *Wilhelm Weith*.
- Weber, *Carl A.*, energy of assimilation in plants, 1880, A., 910.
- Weber, *E.*, and *Ernst Carl Theodor Zinke*, secondary products obtained during the preparation of benzyltoluene, 1875, 155.
- Weber, *Fr.*, condensation of gases on the surface of solid bodies, 1873, 468.
- Weber, *Friedrich Rudolph*, preparation of artificial fuel, especially charcoal bricks, 1874, 1022.
- on a new compound of oxygen and sulphur, and on an analogous substitution product of selenium, 1876, i., 677.
- on sulphuric anhydride and a new sulphuric hydrate, 1877, ii., 164.
- composition and durability of glass, 1879, A., 754.
- behaviour of tin and lead alloys with vinegar, 1879, A., 990.
- explosion of petroleum and other combustible liquids, 1881, A., 1181.
- behaviour of iodine with sulphuric anhydride and with the hydrates of sulphuric acid, 1882, A., 803.
- behaviour of tellurium with sulphuric anhydride and with sulphuric acid, 1882, A., 804.
- tin nitrates, 1882, A., 1266.
- formation of patina, 1882, A., 1334.
- Weber, *Heinrich*, heat conducting power of iron and German silver, 1873, 349.
- Weber, *Heinrich Friedrich*, specific heat of diamond and graphite, 1874, 221.
- specific heats of carbon, boron, and silicon, 1876, i., 866.
- Weber, *Rudolf*, influence of coloured light on the assimilation of organic and inorganic matters by peas, 1875, 1211.
- analysis of soils from the Bunter sandstone formation, 1880, A., 281.

- Weber, W.**, detection of indican in urine, 1879, A., 313.
- Websky, Christian Friedrich Martin**, use of acid potassic sulphate as a flux for metallic sulphides and analogous compounds, 1873, 89.
- *julianite*, 1873, 149.
- *groehauite* and *magnochromite*, 1874, 666.
- *striegovite* from *Striegau* in *Silesia*, 1874, 666.
- *allophite* from *Langenbielau* in *Silesia*, 1874, 1066.
- the isomorphism and chemical constitution of *lievrite*, *humite* and *chondrodite*, 1877, ii., 117.
- *beryl* from *Eidsvold*, *Norway*, 1877, ii., 174.
- horn mercury from *el Doctor*, *Mexico*, 1878, A., 710.
- accidental colouring of zeolitic minerals, 1878, A., 711.
- crystalline form of *descloizite*, 1881, A., 1001.
- crystalline form of *vanadinite* from *Cordova*, 1881, A., 1002.
- Weckwarth, E.**, *m*-bromo-*o*-toluenesulphonic acid, 1874, 1093.
- Weddige, Anton**, cyanocarbonic ether, 1873, 381; 1875, 447.
- action of potassium sulphhydrate on aromatic nitriles, 1873, 1241.
- some sulphuretted derivatives of oxalic acid, 1874, 566.
- on cyanocarbonic acid, its ethers and its derivatives, 1875, 447.
- action of alcoholic ammonia on methyl oxalate, 1876, i., 698.
- ethylene derivatives of phenol and salicylic acid, 1880, A., 316.
- ethylene ethers of phenol and nitrophenol, 1881, A., 1136.
- Wegner, M.**, action of iodine on arsenious acid, 1875, 133.
- Wegscheider, Rudolf**, derivatives and constitution of opianic and hemipinic acids, 1882, A., 1206.
- Wehnen, J.**, derivatives of  $\alpha$ - and  $\beta$ -dibenzoylbenzenes, 1876, i., 916.
- Wehrlin, Alphonse**, ferro- and ferricyanides of aniline for aniline-black, 1875, 1063.
- Wehrlin, Eugène**. See *Philippe Henri Arnould de Clermont*.
- Weidel, Hugo**, nicotine, 1873, 505.
- cinchonine, 1875, 87; 1877, ii., 343.
- *ixolyte*, 1878, A., 17.
- *cubebin*, 1878, A., 80.
- *berberine*, 1879, A., 656.
- compounds from animal tar, 1880, A., 267.
- Weidel, Hugo**, tetrahydrocinchoninic acid, 1881, A., 830; 1882, A., 530.
- diquinoline, 1882, A., 69.
- $\beta$ -cinchoninesulphonic acid and its derivatives, 1882, A., 225.
- Weidel, Hugo**, and *Richard Brix*, cinchonine and pyrocinchonic acids, 1882, A., 1304.
- Weidel, Hugo**, and *Giacomo Luigi Ciamician*, compounds in animal tar, 1880, A., 403.
- dry distillation of gelatin, 1881, A., 295.
- Weidel, Hugo**, and *Albert Cobenzl*, cinchoninic acid and quinoline derivatives, 1881, A., 742.
- Weidel, Hugo**, and *Guido Goldschmiedt*, the mineral spring of *Ótura*, in *Hungary*, 1878, A., 18.
- Weidel, Hugo**, and *Max Gruber*, action of bromine on triamidophenol in presence of water, 1877, ii., 778.
- Weidel, Hugo**, and *Max von Schmidt*, modification of *Sauer's* method for estimating sulphur, 1877, ii., 798.
- formation of cinchonimeronic acid from quinine, and its identity with pyridinedicarboxylic acid, 1879, A., 947.
- Weidel, Hugo**. See also *Ludwig (Ritter) Barth von Barthenau*, *Guido Goldschmiedt*, *Heinrich Hermann Christian Hlasiwetz*.
- Weigelt, Curt Heinrich**, *Dochnahl's* new method of preparing wine, 1879, A., 569.
- influence of varying pressures on grape-must and wine, 1880, A., 358.
- injury to fishes by waste liquids, 1880, A., 490.
- picking of grapes, 1880, A., 517.
- Weigelt, Curt Heinrich**, and *Oscar Saare*, the time of first racking-off new wines, 1879, A., 569; 1880, A., 517.
- clearing action of Spanish earth, 1880, A., 517.
- Weigert, Leopold**, clarifying and preserving wine, 1879, A., 290.
- estimation of acetic acid in wine, 1879, A., 980.
- detection of salicylic acid in wine and in fruit juices, 1880, A., 352.
- Weil, Frédéric**, further note on *Weil's* volumetric method of estimating copper, 1879, A., 276.
- direct deposition of copper on cast iron, wrought iron, and steel, 1882, A., 670.
- copper plating, 1882, A., 782.

- Weil, Frédéric, and Ferdinand Jean**, note on a white lead coloured yellow by oil, 1877, ii., 948.
- Weiler, Julius**, action of methylal on toluene, benzyl chloride, and diphenyl, 1875, 151.
- Wein, Ernst**, estimation of soluble phosphoric acid in superphosphates, 1879, A., 745.
- manuring experiments with bone-meal superphosphates, 1879, A., 959.
- feeding calves without the cows' milk, 1879, A., 1046.
- superphosphates from pure tricalcium phosphate, 1880, A., 141.
- growth of yellow lupins, 1880, A., 736; 1881, A., 299.
- condensed milk, 1880, A., 926.
- experiments with various phosphates as manure, 1881, A., 120.
- pigeons' dung, 1881, A., 121.
- cultivation and manuring of Leguminosæ, 1881, A., 938.
- the combination in which nitrogen is most available for plants, 1882, A., 769.
- Wein, Ernst, Ludwig Rösch and Julius Alexander Lehmann**, analysis of superphosphates, 1880, A., 140.
- Wein, Ernst**. See also *Max Heinrich Märcker*.
- Weinberg, Arthur**. See *Paul Friedländer*.
- Weinberg, E.**, monobromo-*a-m*-xylene-sulphonic acid, 1878, A., 724.
- Weinberg, E.** See also *Oscar Georg Jacobsen*.
- Weinhold, Adolf Ferdinand**, pyrometric researches, 1874, 115.
- preparation of selenium resistance rods for photophonic purposes, 1881, A., 339.
- Weinlig, Rudolph**, de Haën's process for purifying the feed-water of steam-boilers, 1874, 1022.
- Weinrich, Moriz**, improvement in the preparation and treatment of saccharine substances and compounds, 1879, A., 423.
- Weisbach, Julius Albin**, zeunerite, 1873, 150.
- copper arsenide, 1873, 851.
- notices on uranium minerals, 1873, 1108.
- roselite, 1874, 553.
- rhagite, 1874, 667.
- luzonite, 1875, 547.
- bismuthospherite, 1878, A., 116.
- pyritous silver ores, 1878, A., 380.
- cacochlor from Reigersdorf near Görlitz, 1879, A., 901.
- Weisbach, Julius Albin**, sulphide of silver (silver-kies), 1880, A., 14.
- mineralogical notices, 1881, A., 362.
- crystalline form of leucite, 1881, A., 397.
- Weise, G.**, on the silicates of the shell limestone and their importance in the formation of soils, 1878, A., 447.
- Weise, K. von**, manufacture of white lead, 1873, 1268.
- Weiske, Hugo**, colouring of bones through madder feeding, 1874, 490.
- apparatus for the estimation of dry matter in a stream of hydrogen, 1874, 717.
- composition of bone after varied feeding, 1875, 277.
- application of salicylic acid to titration, 1876, i., 113.
- behaviour of cellulose with the alkaline earths, 1876, ii., 662.
- researches on the formation of hippuric acid in the organisms of herbivorous animals supplied with different kinds of fodder, 1877, i., 217.
- composition of horn- and cray-fish shells, 1877, i., 728.
- digestive power of geese for fibrin, 1880, A., 330.
- influence of shearing on yield of milk, 1880, A., 487.
- Weiske, Hugo, and G. Kennepohl**, ewes' milk as influenced by fodder, 1882, A., 1309.
- Weiske, Hugo, and Theodor Mehlig**, digestion of cellulose by geese, 1878, A., 905.
- Weiske, Hugo, and Eugen Wildt**, the composition of the bones of animals fed with food containing varying proportions of lime and phosphoric acid, 1874, 489.
- the formation of fat in the animal body, 1874, 994; 1875, 173.
- Weiske, Hugo, St. von Dangel, and Max Schrodt**, nutritive value of asparagin, 1880, A., 330, 485.
- Weiske, Hugo, Boleslaw Dehmel, and Bernhard Schulze**, digestibility and nutritive value of the soja bean, 1880, A., 501.
- Weiske, Hugo, G. Kennepohl, and Bernhard Schulze**, spent hops as fodder, 1880, A., 502.
- digestibility and nutritive value of acorns, 1880, A., 820.
- relation of asparagin to animal nutrition, 1882, A., 986.

- Weiske, Hugo, Max Schrodtt, and Boleslav Dehmel**, influence of fodder on the quantity and quality of milk-fat, 1880, A., 184.
- Weiske, Hugo, Max Schrodtt, M. C. de Leeuw, G. Kennepohl, and Bernhard Schulze**, digestibility and nutrient power of caroba beans, 1880, A., 563.
- Weiske, Hugo** (and others), influence of sheep shearing on the digestion of food, and on nitrogen metamorphosis; on the action of arsenic in feeding, and on nitrogen changes, 1876, i., 948.
- composition of red clover and maize, 1880, A., 499.
- assimilation in sheep of various ages, 1880, A., 724.
- Weiskopf, Paul**, production of opacity in glass, 1873, 657.
- precipitated gold, 1874, 297.
- Weiss, Christian Ernst**, quartz-crystals from the Wallis, 1873, 857.
- occurrence of zeolites in the basalt of the Limperichkopf at Asbach, 1873, 1116.
- concussion figures of galena and corrosion figures of gypsum 1878, A., 550.
- Weiss, Ed.**, analyses of hops 1879, A., 957.
- Weiss, Eug.**, on the estimation of the extractive in malt by the so-called method of two filtrates, 1874, 1019.
- Weiss, Georg.** See *Oscar Gustav Doebner*.
- Weiss, Gustav.** See *Hans Hübner*.
- Weiss, Leopold**, estimation of sugar, 1874, 1182.
- Weiss, Reinh.** See *Adolph Claus*.
- Weiss, Sigmund**, source of liver-glycogen, 1874, 594.
- Weith, Wilhelm**, synthesis of aromatic acids, 1873, 901.
- mutual convertibility of aromatic mustard oils (sulphocarbimides) and cyanides, 1873, 908.
- action of alcoholates and phenates on amides, 1873, 1240.
- $\alpha$ -cyanonaphthalene, 1873, 1241.
- preparation of aromatic sulphureas, 1873, 1241.
- desulphuration of diphenylsulphurea by mercuric oxide, 1874, 272.
- carbodiphenylimide, 1874, 480.
- desulphuration of mustard oils, 1874, 992.
- tetraphenylguanidine and diphenylcyanamide, 1874, 1170.
- oxidation of *o*-toluic acid to phthalic acid, 1875, 73.
- Weith, Wilhelm**, sulphureas and guanidines, 1875, 251.
- danger of preparing chloride of cyanogen, 1875, 1183.
- mixed sulphureas, 1876, i., 574.
- carbethyphenylimide, 1876, i., 603.
- on aromatic compounds which prevent the precipitation of cupric hydrate by alkalis, 1876, ii., 76.
- methenyldiphenyldiamine, 1876, ii., 205.
- reactions of carbodiphenylimide, 1876, ii., 419.
- simple mode of preparing doubly substituted ureas, 1876, ii., 639.
- carbotriphenyltriamine, 1877, ii., 448.
- action of sulphuric acid on malic acid, 1878, A., 138.
- action of  $\text{PCl}_3$  on carbamides, 1878, A., 141.
- synthesis of carbotriphenyltriamine, 1879, A., 462.
- relation of the number of fish to the lime present in waters, 1881, A., 630.
- Weith, Wilhelm, and Robert Bind-schedler**, a new formation of phthalic acid, 1875, 162.
- Weith, Wilhelm, and Robert Ebert**, constitution of tetraphenylmelamine, 1876, i., 84.
- Weith, Wilhelm, and Al. Landolt**, synthesis of aromatic acids, 1875, 1194.
- reaction of the mustard oil (*sulphocarbimide*) obtained from *p*-bromaniline with copper filings, 1875, 1200.
- Weith, Wilhelm, and B. Schroeder**, diphenylguanidine, 1875, 85.
- a new diphenylguanidine, 1875, 770.
- Weith, Wilhelm, and Adolf Weber**, supposed formation of ammonium nitrite from water and nitrogen, 1875, 1000.
- Weith, Wilhelm.** See also *Victor Merz*.
- Weitz, Max**, crystallisation of sugar and preparation of sugar-candy, 1879, A., 844.
- a baking powder, 1881, A., 132.
- Welborn, G.**, analysis of "Vandyke-red," 1874, 1100.
- detection of alum in bread and flour, 1878, A., 1009.
- Welde, Hermann**, the sulphodicarbonic acids, 1876, ii., 624; 1877, ii., 314.
- Weldon, Walter**, treatment of dilute chlorine, 1873, 949.



- Weldon, Walter**, soda manufacture, 1878, A., 534.
- Welkow, A.**, beryllium platinochloride, 1874, 229.
- beryllium palladiochloride, 1874, 443.
- aluminium platinochloride, 1874, 657.
- aluminium palladious chloride and beryllium palladious chloride, 1874, 1065.
- Weller, Albert**, estimation and separation of antimony and tin, 1882, A., 1324.
- Weller, H.** See *Adolph Claus*.
- Wenghöffer, Ludwig**, action of sulphurous chloride and ethylsulphuric chloride on aniline and anilides, 1877, ii., 447; 1878, A., 297.
- Weppen, Hermann**, on some constituents of white hellebore root, 1873, 905.
- salts of jervic acid, 1873, 906.
- presence of cinnamic acid in tea, 1875, 388.
- production of kermes, 1875, 735.
- Werigo, Alexander A.**, capability of azobenzene to form addition products, 1873, 383.
- sulphur in coal-gas, 1876, ii., 217.
- Werigo, Alexander A.**, and *Petr G. Melikoff*, preparation of dichloropropionic acid from glyceric acid, 1878, A., 289.
- monochlorolactic acid and dichloropropionic acid from glyceric acid, 1879, A., 521.
- Werigo, Alexander A.**, and *Okulitsh*, decomposition products of the chloroanhydride of glyceric acid, 1873, 1020.
- Werigo, Alexander A.**, and *Simeon M. Tanatar*, production of fumaric acid and non-rotating malic acid from glyceric acid, 1875, 357.
- Werigo, Alexander A.**, and *Eugène W. Werner*, dichloropropionic ether from glyceric acid, 1874, 242.
- Werkowitsch, C.**, and *von Klenze*, taking samples of milk, 1880, A., 828.
- Werncke, Aug.**, volumetric estimation of molybdic acid, 1875, 913.
- Werner, Eugène W.** See *Alexander A. Werigo*.
- Werner, H.**, action of various bodies on nitroethane, 1877, i., 297.
- Werner, Hermann**, chloroform containing amyl alcohol, 1878, A., 821.
- vaseline, 1880, A., 930.
- Wernich, Albrecht Ludwig Ayathon**, effect of putrefactive changes on bacteria, 1880, A., 726.
- Weselsky, Philipp**, preparation of iodine substitution products, 1873, 761; 1875, 139, 345.
- aloresinic acid, a new acid from aloes, 1873, 1039.
- derivatives of orcin, 1874, 693.
- action of nitrous acid on phenol, 1875, 568.
- diazophenyl compounds, 1875, 1203.
- derivatives of phloroglucin, 1876, i., 249.
- detection of phloroglucin and nitrites, 1876, i., 964.
- Weselsky, Philipp**, and *Rudolf Benedikt*, glycyrrhetin, 1877, i., 96.
- azophenols, 1878, A., 498; 1879, A., 718.
- resoreinol colouring matters, 1881, A., 726.
- ethers of quinol and oreinol, 1881, A., 1139.
- action of nitrous acid on the ethyl pyrogallates, 1882, A., 53.
- nitro-products of the catechol series, 1882, A., 1200.
- Weselsky, Philipp**, and *J. Schuler*, preparation of hydroquinone, 1877, i., 78.
- Wesendonck, Karl**, spectrum of carbonic anhydride, 1881, A., 861; 1882, A., 253.
- West, Benjamin**, estimation of potash in potassium sulphate, 1882, A., 553.
- West, Benjamin.** See also *Sylvester Zuckschwerdt*.
- West, Gratien**, on the mechanical employment of heat, 1874, 1056.
- West, Paul.** See *Otto Wallach*.
- West, Samuel Hatch.** See *William James Russell*.
- West-Knights.** See *Knights*.
- Westmoreland, James William**, estimation of carbon in steel, 1880, A., 751.
- Weston, William**, the application of phosphorus to the "poling" of copper, 1876, ii., 227.
- Westphal**, description of a porphyry vein, with loose crystals of orthoclase in the "Ellthalgelbige," 1874, 561.
- Wethered, Edward**, on the composition of Pennant grits in contact with and at a distance from carbonaceous deposits, 1882, T., 79.
- Wetzig, Bruno**, recent improvements in the iodine industry, 1880, A., 195.
- Wetzke, Th.** See *Carl Stünkel*.
- Weyde, P. H. van der**, a new method of testing the inflammability of petroleum and other hydrocarbons, 1873, 532.

- Weyl, Theodor**, reactions of animal and vegetable albuminoids, 1876, ii., 644.  
 — creatinine and creatine, 1879, A., 471.  
 — decomposition of tyrosine by putrefaction, 1879, A., 541.  
 — preparation of copper for elementary analysis, 1882, A., 1235.
- Weyl, Theodor**, and *Vasilius K. von Anrep*, formation of hippuric acid in the animal organism during fever, 1880, A., 716.  
 — haemoglobin carbonic oxide, 1880, A., 816.
- Weyl, Theodor**, and *Carl Bischoff*, gluten, 1880, A., 482; 1882, A., 537.
- Weyl, Theodor**, and *A. Goth*, absorption of oxygen by alkaline solutions of pyrogallol and phloroglucol, 1882, A., 401.
- Weyl, Theodor**, and *Franz Xaver Zeidler*, oxygen absorption by alkaline pyrogallate, 1881 A., 307.  
 — relation between the oxygen and organic matter found in mineral waters, 1881, A., 650, 1087; 1882, A., 556.
- Weyrich, Rudolf**, on the different methods employed for the quantitative estimation of caffeine, 1873, 1264.
- Whewell, George**, analysis of bleaching powder, 1879, A., 505.  
 — tenacity of starch, 1879, A., 570.
- Whiffen, William George**, new alkaloid from *Cinchona cuprea*, 1882, A., 316.
- Whitaker, George**, and *James Ashworth*, preparation of wool before carding, 1874, 1193.
- White, J. Fleming**. See *Charles Loring Jackson*.
- Whitney, H. C.**, apiole, 1880, A., 412.
- Wibel, Ferdinand**, fibrous quartz from South Africa, a pseudomorph of crocidolite, 1873, 739, 1209.  
 — pseudomorphs of gypsum and glass, 1873, 740.  
 — analyses of some waters of the island of Cephalonia, 1873, 741.  
 — gold from Vancouver Island and from West Africa, 1873, 1108.  
 — lime-uranite in the phosphorite of Carceres, Spain, 1873, 1110.  
 — composition and formation of azurite, 1873, 1110.  
 — action of heat on mixtures of calcium phosphate and calcium carbonate, 1874, 542.  
 — the constitution of bone phosphate, 1874, 591.
- Wibel, Ferdinand**, guanovulite, a new mineral from Peruvian guano, 1874, 779.  
 — the cause of the luminosity and non-luminosity of flames, 1875, 603.
- Wibel, Ferdinand**, and *Edward Zacharias*, new genus of plants capable of precipitating calcium carbonate, 1873, 765.
- Wichelhaus, Karl Hermann**, phenokinone and similar compounds, 1873, 172.  
 — cresol colours, 1874, 721.  
 — on the synthesis of indigo-blue, 1876, ii., 532.  
 — constitution of quinhedrone, 1878, A., 63, 146; 1880, A., 41.  
 — experiments with Scheibler's method of analysing raw sugar, 1880, A., 144.  
 — colouring matter from dimethylaniline and chloranil, 1882, A., 58.
- Wichelhaus, Karl Hermann**. See also *Fritz von Dechend*, *Maximilian Salzmann*.
- Wichmann, Carl Ernst Arthur**, microscopical examinations of thin sections of compact garnet, 1876, ii., 51.  
 — double-refracting garnets, 1876, ii., 178.  
 — the sericite rocks of the Taunus, 1879, A., 23.  
 — some lavas from the island of Ninafou, and communications on the island of Futuna, 1881, A., 701.
- Widman, Oskar**, ammoniacal salts of silver, 1873, 1106.  
 — a new synthesis of alizarin; constitution of rufigallie acid, 1876, ii., 518.  
 — on the chlorine derivatives of naphthalene, 1877, ii., 899.  
 — dichloronaphthalene- $\beta$ -sulphonic acid, 1879, A., 722.  
 — action of chlorine on naphthalene- $\beta$ -sulphonic chloride: a new trichloronaphthalene, 1879, A., 722.  
 — action of chlorine on chloronaphthalene: nitro-derivatives of  $\alpha$ - and  $\beta$ -dichloronaphthalenes, 1880, A., 47.  
 — action of chlorine on naphthalene- $\alpha$ -sulphonic chloride;  $\gamma$ -trichloronaphthalene, 1880, A., 167.  
 — dichloronaphthalene- $\alpha$ -sulphonic acid, 1880, A., 168.  
 — preparation of *m*-toluidine, 1880, A., 635; 1882, A., 47.  
 — cuminoin, 1881, A., 597.  
 — synthesis of thymol from cuminol, 1882, A., 727.

**Widman, Oskar.** See also *Albert Atterberg.*

**Widmann, Eduard,** on the nitrobenzoic acids, 1875, 893; 1877, ii., 783.

— isomeric nitro- and amido-benzoic acids, and formation of chloranil from the latter, 1879, A., 154.

**Wiede, Friedrich Carl Hermann,** expansion of the solid elements by heat, a function of the atomic weight, 1878, A., 549.

— thermochemical relation between the boiling and melting points of solid elements, 1879, A., 690.

— absolute expansion of liquid and solid substances, 1879, A., 1002; 1880, A., 88.

— specific heat and expansion of the solid elements, 1880, A., 783.

— expansion and molecular volumes of liquid organic compounds, 1880, A., 784.

**Wiedemann, Ernst Eilhard Gustav,** indices of refraction of the sulphuretted substitution derivatives of the carbonic ethers, 1873, 620.

— on the light reflected from potassium permanganate, 1875, 120.

— preliminary notice on a new method for measuring the specific heat of gases, 1875, 323.

— on the electric conductivity of the halogen compounds of lead, 1876, i., 668.

— on the specific heat of gases, 1876, ii., 589.

— on the specific heat of vapours and its variation with the temperature, 1878, A., 193.

— some properties of alloys, 1878, A., 465.

— phosphorescence produced by electrical discharges, 1880, A., 204.

**Wiedemann, Gustav Heinrich,** on the combining proportions of bases and acids, 1874, 863.

— dissociation of hydrated salts, 1874, 946, 1131.

— the magnetic behaviour of chemical compounds, 1878, A., 545.

— dissociation of dissolved ferric salts, 1879, A., 348.

**Wiegand, Eugen.** See *Fedor F. Beilstein.*

**Wieser, Heinrich,** pyroguaiacol, 1881, A., 812.

**Wiesinger, Friedrich.** See *Friedrich H. S. Müller.*

**Wiesinger H.** See *Ludw. Rissmüller.*

**Wiesinger, Wilhelm Johannes,** toluyl-enediaminesulphonic acid, 1874, 805.

**Wiesner, Julius,** influence of temperature on the development of *Penicillium glaucum*, 1874, 708.

— relation of light to chlorophyll, 1874, 999.

— behaviour of vegetable and animal fibre during the carbonisation of wool and cloth, 1876, ii., 563.

— influence of light and of radiant heat on the transpiration of plants, 1877, ii., 349.

— phloroglucin as a test for woody fibre, 1878, A., 612.

— influence of intermittent light on the formation of chlorophyll, 1881, A., 930.

**Wiggin, John,** obituary notice of, 1879, T., 265.

**Wigman, Leonard Willem Theodoor.** See *Antoine Paul Nicolas Franchimont.*

**Wigner, George William,** ash and extract of teas, 1874, 1106.

— tea, 1876, i., 424.

— determination of the specific gravities of fats at high temperatures, 1877, ii., 108.

— volumetric determination of carbonic acid, 1877, ii., 218.

— products of combustion of coal gas, 1877, ii., 948.

— diseased milk, 1878, A., 685.

— nitrogen compounds present in cereals, 1878, A., 1014; 1879, A., 486.

— on Cleopatra's needle, 1879, A., 445.

— nitrogenous constituents of cocoa, 1879, A., 493.

— some experiments with silicated carbon and spongy iron filters, 1879, A., 493.

— Koettstorfer's process for butter analysis, 1880, A., 69.

— coefficients of expansion of butter, lard, fats, etc., 1880, A., 70.

— determination of carbonic acid in carbonates, 1880, A., 346.

— analyses of various tinned foods, 1880, A., 594; 1881, A., 211.

**Wigner, George William,** and *Arthur Herbert Church,* analyses of two ancient samples of butter, 1880 A., 357.

**Wigner, George William,** and *Robert Henry Harland,* white lead, 1877, ii., 948.

— action of potassium permanganate on potable waters at different temperatures, 1881, A., 1172.

- Wiik, Fredrik Johan** (and others), mineral analyses, 1882, A., 286.
- Wilber, Francis A.** See *Peter Townsend Austen*.
- Wilckens, Martin**, digestion in the different divisions of the digestive canal of the sheep, 1879, A., 391.
- Wilcock, Edgar.** See *Francis Robert Japp*.
- Wild, E.**, diamidosulphobenzide, 1882, A., 182.
- Wilde, Prosper de**, action of the electric current on some gases and mixtures of gases, 1874, 646.
- preparation of acetylene, 1874, 882.
- action of hydrogen on ethylene and acetylene in contact with platinum black, 1874, 882.
- Wildt, Eugen**, composition of the bones of rabbits of various ages, 1873, 290.
- formation of hippuric acid, 1874, 385.
- digestion in sheep, 1878, A., 991.
- seeds of *Lullemantia iberica*, 1879, A., 822.
- methods proposed for cleansing lupins, 1880, A., 820.
- manuring potatoes and sugar beet, 1882, A., 93.
- agricultural value of various forms of phosphoric acid, 1882, A., 1228.
- Wildt, Eugen** (and others), *Symphytum asperinum* as a fodder, 1880, A., 735.
- Wildt, Eugen.** See also *Hugo C. E. Schulz, Hugo Weiske*.
- Wiley, Harvey Washington**, detection of hydrochloric acid by sulphuric acid and potassium dichromate, 1880 A., 744.
- Wiley, William Edward**, tinning of iron tacks, 1875, 1302.
- Wilkes, John**, and **Thomas Johnson**, improvements in purifying or refining copper, 1879, A., 423.
- Will, Carl Wilhelm**, action of carbonyl chloride and of alcoholic bromides, etc. on substituted thiocarbamides, 1881, A., 905.
- compounds formed by the action of alcoholic iodides on thiocarbamide, 1882, A., 723.
- thiocarbamates, 1882, A., 1088.
- Will, Carl Wilhelm**, and **Oscar Bierschowski**, action of alcoholic iodides on ditolylthiocarbamides, 1882, A., 1090.
- Will, Carl Wilhelm**, and **August Laubenheimer**, the glucoside from white mustard seed, 1880, A., 265.
- Will, Carl Wilhelm.** See also *Ferdinand Tiemann, Adolf Winther*.
- Will, Hermann.** See (*Freiherr*) *Eugen Franz Cujetan von Gorup-Besanez*.
- Willgerodt, Heinrich Conrad Christoph**, contributions to the knowledge of alizarin and oxyanthraquinone, 1876, i., 249.
- titration of normal salts which have an acid reaction, 1876, ii., 214.
- reactions of  $\alpha$ -dinitrochlorobenzene, 1876, ii., 405.
- action of  $\alpha$ -dinitrochlorobenzene on amido-compounds, 1877, i., 90.
- action of  $\alpha$ -dinitrochlorobenzene on acetamide, 1877, i., 473.
- action of  $\alpha$ -dinitrochlorobenzene on carbamide, 1877, i., 473.
- action of  $\alpha$ -dinitrochlorobenzene on thiocarbamide, 1878, A., 141.
- action of  $\alpha$ -dinitrochlorobenzene on carbanilide, 1878, A., 141.
- action of  $\alpha$ -dinitrochlorobenzene on carbamide, azo-compounds, aromatic hydrocarbons, and sodium amalgam, 1878, A., 570.
- action of basic compounds on solutions of  $\alpha$ -dinitrochlorobenzene in carbon bisulphide, 1879, A., 714.
- preparation of ethers of  $\alpha$ -dinitrophenol from  $\alpha$ -dinitrochlorobenzene, 1879, A., 716.
- ethers of trinitrophenol, 1879, A., 923.
- $\alpha$ -dinitrophenyl ether, 1880, A., 642.
- preparation of *p*-nitrophenol ethers, 1882, A., 396.
- action of caustic alkalis on acetone solutions of halogenated compounds, 1882, A., 491.
- action of alcoholic potash on *p*-nitrochlorobenzene, 1882, A., 953.
- Williams, Charles Hanson Greville**, production of furfural by the action of superheated water upon wood, 1873, 162.
- researches on emeralds and beryls; on the colouring matter of the emerald, 1874, 28.
- analysis of emeralds and beryls, 1877, ii., 574.
- action of sodium on lepidine, 1878, A., 432.
- action of sodium on quinoline, 1878, A., 432; 1881, A., 613.
- substitute or litmus, 1879, A., 553.
- $\beta$ -lutidine, 1882, A., 309.
- Williams, Charles Hanson Greville**, and **William Horscraft Waters**, physiological action of  $\beta$ -lutidine, 1881, A., 1058.
- Williams, David.** See *Robert Lavender*.



- Williams, Eli**, absorption of moisture by glycerol, 1881, A., 1120.
- Williams, Francis H.**, synthesis of hydrocarbons by the treatment of cast iron with acids, 1874, 973.
- Williams, John**, guaiacol and creosote, 1874, 583.
- salicylic acid, 1878, A., 576.
- Williams, Matthew Whitley**, on the action of the copper-zinc couple upon nitrates, and the estimation of nitric acid in water analysis, 1881, T., 100.
- on the estimation of organic carbon and nitrogen in water analysis, simultaneously with the estimation of nitric acid, 1881, T., 144.
- Williams, Matthew Whitley**. See also *Edward Lawrence Cleaver*.
- Williams, Richard Douglas**. See *Hans Hübner*.
- Williams, William Carleton**, terebic and pyroterebic acids, 1874, 70.
- on some compounds of antimony pentachloride with alcohols and with ether, 1876, ii., 463.
- the derivatives of diisobutyl, 1877, i., 541; 1879, T., 125.
- Williams, William Carleton**. See also *Peter Phillips Bedson*, *Thomas Carnelley*.
- Williamson, Robert**, on some metallic derivatives of coumarin, 1875, 850.
- Willis, Arthur**, obituary notice of, 1882, T., 239.
- Willis, William**, photographic pictures on platinum, iridium, etc., 1874, 1019.
- Wilm, Edmund**, the mineral waters of Challes in Savoy, 1878, A., 560.
- analyses of the sulphurous mineral waters of Aix in Savoy, and of Marlioz, 1878, A., 561.
- mineral waters of Auvergne, 1879, A., 446.
- presence of mercury in the mineral waters of Saint-Nectaire, 1879, A., 697.
- composition of the waters of Cransac (Aveyron), 1880, A., 454.
- mineral waters of Bussang (Vosges), 1880, A., 455.
- ferruginous and nitrated mineral waters, 1880, A., 617.
- Willm, Edmund**. See also *Adam Charles Girard*.
- Willotte, H.**, law of Dulong and Petit applied to perfect gases, 1880, A., 83.
- Wills, Thomas**, solidification of nitrous oxide, 1874, 21.
- obituary notice of, 1880, T., 261.
- Wills, William Leonard** on the atomic weight of tellurium 1879 T., 704.
- Wilm, Theodor**, behaviour of chlorinated ethyl formate with potassium cyanate, 1878, A., 851.
- estimation of chromium, 1880, A., 188.
- chemistry of the platinum metals, 1880, A., 854; 1881, A., 226, 514.
- chromium sesquioxide, 1881, A., 63.
- action of palladium, rhodium, and platinum on coal-gas, 1881, A., 706.
- oxidation of metals of the platinum group, 1882, A., 1033.
- Wilson, Albert Edward**, and **Herbert Ingle**, the Montpellier strong Sulphur Well, Harrogate, 1881, T., 510.
- Wilson, Alexander Stephen**, the ash of diseased potatoes, 1874, 90.
- analyses of teas, 1874, 391.
- amounts of sugar in the nectar of various flowers, 1878, A., 997.
- Wilson, David**. See *Edmund James Mills*.
- Wilson, Edward**, molecular volume of solids, 1882, A., 275.
- Wilson, Hugh M.**, remarks on the estimation of calcium sulphate in beer, 1879, A., 79.
- Wilson, J. Chapman**, obituary notice of, 1873, 783.
- Wilson, Pierce B.**, silica in grasses, 1877, i., 336.
- Wimmel, C.** See *Adolph Claus*.
- Wimmer, Friedrich**, working of titaniferous iron ores, 1873, 540.
- the copper process of Hunt and Douglas, 1873, 952.
- Winkel, experiments** on churning, 1880, A., 75.
- Winkelmann, Adolf August**, development of heat by the solution of mixed salts in water, 1874, 1049.
- the specific heat of mercury, 1877, i., 678.
- on the vapour tensions of homologous series and on Kopp's law of constant differences of boiling points, 1877, ii., 822; 1881, A., 71.
- deviation of some gases from Boyle's law, 1879, A., 346.
- relations between the pressures, temperatures and densities of saturated vapours, 1880, A., 692.
- Winkelmann, Adolf August**. See also *Friedrich Nies*.
- Winkler, Clemens Alexander**, on some new minerals containing uranium, 1873, 606.
- rhagite and roselite, 1875, 240.
- on the solubility of the platinum in platinum alloys in nitric acid, 1875, 428.

- Winkler, Clemens Alexander**, separation of tin from antimony and arsenic, 1876, i., 748.
- experiments on the conversion of sulphurous acid into sulphuric anhydride by contact-action for preparing fuming sulphuric acid, 1876, i., 783.
- on a process for rendering the arsenical residues of the manufacture of aniline innocuous, 1877, ii., 377.
- resistance of aluminium to atmospheric and other actions, 1877, ii., 945.
- mineral analyses, 1878, A., 17.
- fire damp in collieries, 1879, A., 760.
- recrystallization of argentiferous bismuth, 1881, A., 354.
- examination of the iron meteorite from Rittersgrün, 1881, A., 560.
- amount of sulphuric anhydride in fuming sulphuric acid, 1881, A., 1097.
- Winogradoff, Alexander**, dialysed albumin, 1876, i., 719.
- Winogradoff, W.**, action of zinc ethyl and zinc methyl on bromoacetyl bromide, 1878, A., 483.
- action of aluminium chloride on acetic chloride, 1880, A., 236; 1881, A., 407.
- Winssinger, Camille**. See *Walthère Spring*.
- Winther, Adolf**, and *Carl Wilhelm Will*, the basalt of the Schiffenberg near Giessen, 1877, ii., 579.
- Winther, Adolf**. See also *Ralph H. Ch. Nevile*.
- Wippermann, R.**, trihydrocyanic acid; a compound polymeric with prussic acid, 1874, 1084.
- Wischnegradsky, Alessi**, ethodimethacetic acid, 1874, 1083.
- on three new pinacolins, 1875, 878.
- amylene, 1877, ii., 286.
- structure of the isomeric amylenes, 1877, ii., 420.
- different amylenes and amyl alcohols, 1878, A., 393.
- isomeric amylenes, 1878, A., 717.
- collidine from aldehyde, 1880, A., 54.
- some derivatives of cinchonine, 1880, A., 269.
- reduction of quinoline and ethylpyridine, 1881, A., 444.
- Wischnegradsky, Alessi**. See also *Alexander M. Butleroff*.
- Wiskemann, Max**, spectroscopic estimation of the amount of hæmoglobin in human blood, 1877, ii., 808.
- Wislicenus, Johannes**, observations on the so-called anhydrides of lactic acid, 1873, 57.
- hydracrylic acid, 1873, 490.
- Wislicenus, Johannes**, acrylic acid, 1873, 493.
- ethylenelactic acid (*paralactic acid*), 1874, 249.
- researches on the derivatives of acetic ethers, 1874, 883; 1876, i., 367.
- *p*-adipimale, diacrylic, and *p*-adipic acids, 1875, 355.
- isomeric lactic acids, 1876, i., 561.
- synthesis by means of acetoacetic ether, 1877, ii., 432.
- decomposition of acetoacetic ethers, 1878, A., 402.
- ethylvinyl oxide, 1878, A., 776.
- decomposition of polybasic acetoacetates by alkalis, 1881, A., 409.
- comparison of the combining energies of the halogens and of sodium with different organic residues, 1882, A., 934.
- Wislicenus, Johannes**, and *Leonhard Limpach*, synthesis of glutaric and  $\alpha$ -methylglutaric acids, 1878, A., 783.
- Wislicenus, Johannes**, and *Friedrich Urech*, ethylmalonic acid, 1873, 376.
- Wispek, Paul**. See *Bronislaw Radziszewski*.
- Witt, Otto Nikolaus**, preparation of nitriles, 1873, 879.
- sebacic acid, 1874, 569.
- dichlorobenzene and its derivatives, 1875, 759.
- on addition products of aromatic amines, and a new method of preparing chlorinated anilines, 1876, i., 264.
- diphenylnitrosamine, 1876, i., 267.
- dichloronitraniline, 1876, i., 935.
- the structure and formation of organic colouring matters, 1876, ii., 403.
- chrysoidin, 1877, ii., 243, 457.
- action of amides on amidazo-compounds, 1877, ii., 453.
- aromatic nitrosamines, 1878, T., 202.
- action of primary amines on diphenylnitrosamine, 1878, A., 53.
- on colouring matters derived from diazo-compounds, 1879, T., 179.
- on a new class of colouring matters, 1879, T., 356.
- presence of ethyl alcohol in coal tar, 1879, A., 136.
- Witt, Otto Nikolaus**. See also *Horace Koechlin*.
- Wittekind, August**. See *Carl Hell*.
- Wittelshöfer, P.**, analyses of materials used for fodder, 1880, A., 183.
- disadvantages of cooling pans in distilleries, 1881, A., 1089.

- Wittenberg, Max**, resocyanin, and the action of ethyl acetoacetate on the phenols in the presence of dehydrating agents, 1882, A., 1289.
- Wittich, C.** See **Karl Birnbaum**.
- Wittich, Wilhelm Heinrich von**, the peptic action of the pyloric glands, 1873, 515; 1874, 592.
- the liver ferment, 1873, 515.
- Witting, F.**, and **Julius Post**, preparation of isomeric xylenesulphonic acids, 1877, ii., 611.
- Wittjen, Bernard**. See **Heinrich Precht**.
- Wittmack, Marx Carl Ludewig**, advantages of only partially removing the fat from oil seeds, 1879, A., 99.
- action of the sap of *Carica Papaya*, 1879, A., 1048.
- Wittmann, Eduard**, experiments with darnel and lucerne as a mixture for meadows, 1881, A., 1065.
- Wittstein, Georg Christoph**, water from the springs of Partenkirchen, 1873, 486.
- analysis of galena, 1873, 652.
- so-called tin caps for bottles, flasks, etc., 1873, 1172.
- detection of ammonia, 1874, 602.
- qualitative and quantitative estimation of adulterations in lead chromate, 1874, 604.
- estimation of potassium cyanide in silver baths which have been used for electroplating, 1874, 1012.
- a new impurity in commercial ammonia, 1875, 485.
- testing coffee, 1875, 1294.
- analysis and valuation of graphite, 1876, i., 108.
- solubility of magnesium carbonate in alkaline borates, 1876, i., 189.
- estimation of water residues, 1876, i., 439.
- analysis of the ash of the bark of the elder tree, 1876, i., 736.
- chemical investigation of coto bark, 1876, i., 736.
- chemical valuation of lignite and coal, 1876, i., 759.
- detection of adulterations in beer, 1876, i., 767.
- a false reaction of nitric acid, 1876, ii., 652.
- analysis of coal for practical purposes, 1876, ii., 659.
- examination of the sunflower, 1877, i., 487.
- ash of *Euphorbia amygdaloides* and of *Herniaria glabra*, 1877, i., 487.
- direct determination of soda in potashes, 1877, ii., 510.
- magnesium, etc. in zinc, 1877, ii., 707.
- Wittstein, Georg Christoph**, compound of sodium and iron with a derivative of pyrogallol, 1878, A., 145.
- coloured sago, 1878, A., 542.
- Witz, Aimé**, thermic effect of the walls of closed vessels on the contained gases, 1879, A., 432.
- a new air thermometer, 1880, A., 783.
- cooling power of gases and vapours, 1881, A., 341.
- Witz, Georges**, volumetric determination of acetates and acetic acid in presence of mineral acids, 1875, 784.
- effect of permanganic acid on aniline-black, 1875, 1064.
- mildew on printed cotton, 1876, i., 820.
- on the freezing point of mercury with snow and hydrochloric acid, 1876, i., 867.
- egg-albumin and blood-albumin, 1876, ii., 228.
- solid albumin (with 15 p.c. hygroscopic water) in white of egg solutions at 17.5°, 1876, ii., 229.
- regeneration of spent albumin by means of pepsin, 1876, ii., 229.
- use of vanadium in the preparation of aniline-black, 1876, ii., 678.
- vanadium aniline-black, 1877, ii., 950.
- inactivity of chromium compounds in producing aniline-black as compared with the action of vanadium compounds, 1879, A., 421.
- value of certain chemical agents in dyeing with aniline-black, 1879, A., 684.
- Witz, Georges**, and **Floris Osmond**, preparation of vanadium compounds from the basic slag of Creusot, 1882, A., 1246.
- Wleügel, Severin**, nitrosobutyric acid, 1882, A., 944.
- ethylic nitrosoacetoacetate, 1882, A., 949.
- Wöhler, Friedrich**, note on a palladium salt, 1875, 134.
- Greenland paechnolite, 1876, i., 884.
- behaviour of palladium in an alcohol flame, 1877, i., 437.
- separation of arsenic from nickel and cobalt, 1877, ii., 573.
- an aluminium battery, 1880, A., 838.
- remarks on the native iron of Greenland, 1881, A., 515.
- Wölz, Adolf**, brominated benzenesulphonic acids, 1873, 1142.
- Wolberg, Louis**, influence of certain salts and alkaloids on digestion, 1881, A., 752, 834.

- Wolff, N.**, benzoyl and benzyl derivatives of diphenyl, 1882, A., 62.
- Wolff, Wilhelm**, a lecture experiment in vegetable physiology, 1873, 522.
- Wolfenstein, O.**, on the phosphorite beds of Estremadura, 1878, A., 385.
- Wolff, A.** See *Auguste Terreil*.
- Wolff, Carl**, diallylaeto-acetic ether and some of its derivatives, 1878, A., 293.
- Wolff, Carl Heinrich**, determination of the melting points of organic bodies, 1876, i., 334.
- Wolff, Emil Theodor von**, assimilation by sheep of various ages, 1873, 519.
- assimilation of food, 1874, 334.
- effects of various quantities of phosphoric acid on oats, 1874, 385.
- water culture of oats, 1874, 1003.
- fattening animals, 1880, A., 173.
- beet-sugar refuse as manure, 1880, A., 742.
- Wolff, Emil Theodor von** (and others), feeding experiments with pigs, 1877, i., 98; 1880, A., 415, 724.
- experiments on the digestibility and nutritive power of meal-flour, 1878, A., 440.
- experiments on the digestive power of the horse, 1878, A., 521.
- composition and digestibility of lucerne hay, 1878, A., 909.
- assimilation of ordinary horse fodder, 1880, A., 173.
- nutritive value of grass at various stages of growth, 1880, A., 329.
- digestion of food by the horse when at work, 1880, A., 414.
- digestion in sheep, 1880, A., 484.
- digestibility of oat-straw, hay, and pea-holms, 1880, A., 916.
- manuring experiments to determine the value of phosphoric acid soluble in "citrate" solution, 1881, A., 1075.
- digestibility of various oil cakes, 1882, A., 86, 647.
- comparative experiments on the digestion of two kinds of clover hay by horses and sheep, 1882, A., 237.
- influence of irregular work on the digestion of food by horses, 1882, A., 319.
- comparison of the digestibility of peas by horses and sheep, 1882, A., 415.
- Wolff, F. A. (and Sons)**, application of the water air-pump to evaporation, distillation, filtration, etc., *in vacuo*, 1873, 132.
- Wolff, Fr. M.**, examination of melaphyr from the neighbourhood of Kleinschnalkalden, 1881, A., 27.
- Wolff, Justus**, transferring Lightfoot-black from one fibre to another, 1880, A., 75.
- aniline-blacks, 1880, A., 76.
- separation of fats from soaps, 1880, A., 587.
- Wolff, Ludwig**. See *Rudolph Fittig*.
- Wolff, R.**, decomposition of cantharidin in cantharides, 1877, i., 722.
- Wolff, Walther**. See *Oscar Gustav Doebner*.
- Wolffberg, Siegfried**, origin and accumulation of glycogen in the animal organism, 1877, i., 484.
- Wolffhügel, von, and Ferdinand Hueppe**, penetration of heat into meat during cooking, 1882, A., 1152.
- Wolffhügel, Gustav Alfred**, pepsin and the digestion of fibrin, 1873, 761.
- effect of sewers, etc., on the purity of the soil, 1877, i., 240.
- carbon monoxide in foundry furnaces, 1879, A., 344.
- amount of carbonic anhydride in shingle, 1880, A., 181.
- value of sulphurous acid as a disinfectant, 1882, A., 1009.
- Wolffhügel, Gustav Alfred, and Georg von Knorre**, difference in the action of solutions of carbonic acid in oil and in water, 1882, A., 1143.
- Wolffhügel, Gustav Alfred**. See also *Robert Koch*.
- Wolfram, Guido**, nitro-compounds of cellulose, 1879, A., 218, 371.
- quantitative determination of theobromine in cacao and chocolate, 1879, A., 406.
- preparation of perbromic acid, 1880, A., 91.
- Wolkow, (Fräulein) Anna**, isocrotlyl ether, 1873, 747.
- Wollheim, Paul**. See *Rudolf Peter Heinrich Heidenhain*.
- Wollny, Martin Ewald**, ridge cultivation, 1879, A., 822.
- temperature of soils, 1879, A., 824.
- result of drying seeds, 1880, A., 493.
- grass mowing, 1880, A., 498.
- estimation of the value of grain, 1880, A., 594.
- fallowing, 1880, A., 736.
- influence of shade on the amount of carbonic anhydride in the air of the soil, 1880, A., 823.



- Wollny, Martin Ewald**, cultivation of beet, 1881, A., 60.
- influence of trenching on the temperature and moisture of soil, 1881, A., 60.
- influence of superficial drying on the temperature and moisture of the soil, 1881, A., 934.
- researches on the amount of water appropriated by agricultural plants, 1881, A., 1060.
- researches on the influence exerted by the physical properties of a soil on the amount of free carbonic anhydride contained in it, 1882, A., 86.
- researches on the influence of the distance between the seed sown on the growth and quality of the crops, 1882, A., 646.
- influence of space on the growth of plants, 1882, A., 880.
- physical properties of the soil in a close or open condition, 1882, A., 1128.
- effects of artificial manures on the physical condition of soils, 1882, A., 1227.
- Wollny, Martin Ewald** (and others), damage to pea and bean seeds by weevil, 1880, A., 919.
- Wolters, W.**, detection and estimation of hypochlorous acid in presence of chlorine, chlorous acid, and chloric acid, 1874, 386.
- on the chemical constitution of bleaching powder, 1875, 236, 422.
- on the crumbling of mortar, 1875, 671.
- Wood, Charles Henry**, and **Edward Louis Barret**, compound of quinine and quinidine, 1882, A., 414.
- Wood, Horatio C.**, note on the alkaloid sophorine, 1878, A., 802.
- Wood, Louis F.**, estimation of arsenic as magnesium pyroarsenate, 1874, 1100.
- Wood, William Henry**, attempts to prepare alums containing aniline and rosaniline, 1878, A., 723.
- Woodbury, W. B.**, a new photographic printing process, 1874, 1021.
- Woodcock, Reginald C.**, gelatin jelly as a dialyser, 1882, A., 663.
- Woodman, William Bathurst**. See **Charles Meymott Tidy**.
- Woods**. See **Tenison-Woods**.
- Woodward, Charles Josiah**, an improved form of gas-generator, 1874, 122.
- Wooldridge, Leonard Charles**, relation of white blood corpuscles to the coagulation of the blood, 1882, A., 322.
- Woolworth, James G.** See **William B. Allbright**.
- Wormley, Theodore G.**, quantitative estimation of urea by alkaline hypochlorites and hypobromites, 1882, A., 779.
- is gelsemic acid identical with æsculin? preparation, properties, and recovery when absorbed, of the important constituents of *Gelsemium sempervirens*, and on gelsemium poisoning, 1882, A., 1109.
- Worm-Müller, Jacob**, nuclein, 1874, 82.
- the value of cupric acetate and formate as a delicate test for grape sugar, 1878, A., 531.
- behaviour of normal urine to cupric acetate and sulphate, and to a solution of cupric acetate containing free acetic acid, 1878, A., 531.
- preparation of grape sugar by Neubauer's modification of Schwarz's method, 1882, A., 1275.
- Worm-Müller, Jacob**, and **Ingebright Severin Hagen**, volumetric estimation of sugar in human urine and in animal liquids, 1878, A., 531.
- supposed compounds of grape sugar with cupric hydrate, 1878, A., 967.
- compounds of grape sugar with cupric oxide and potassium hydrate, 1878, A., 968.
- reduction of cupric hydrate in neutral and acid mixtures by grape sugar, 1881, A., 795.
- reduction of cupric hydrate in alkaline fluids, 1881, A., 795.
- decompositions which occur in the use of Trommer's test, 1881, A., 795.
- sensitiveness of Trommer's test; Fehling's solution as a qualitative reagent for sugar, 1881, A., 851.
- precautions required in using Knapp's solution for estimating sugar; the reduction of cupric oxide by grape sugar in neutral solutions, 1882, A., 558.
- Worontsoff**, dipropylloxalic acid, 1878, A., 29.
- Wortmann, Julius**, intramolecular respiration of plants, 1880, A., 911.
- Wreden, Felix**, camphoric acid, 1873, 72, 505.
- optically inactive camphoric acid, 1873, 1038; 1874, 480.
- hexahydroisoxylene, 1874, 258.
- action of hydriodic acid on toluene, 1876, i., 914.

- Wreden, Felix**, on the constitution of naphthalene, 1876, ii., 407.
- hydrogenation of benzene and its homologues, 1877, ii., 445.
- tetrahydroisoxylene and the constitution of camphoric acid, 1877, ii., 446.
- camphor, 1879, A., 69.
- Wreden, Felix**, and **Bronistas de Znato-wicz**, action of hydriodic acid on naphthalene, 1877, i., 466.
- preparation of isobutylbenzene, 1877, ii., 885.
- hexa- and octa-hydronaphthalenes, 1877, ii., 899.
- Wright, Arthur Williams**, oxidation of alcohol and ether by ozone, 1874, 975.
- spectroscopical investigation of gases from meteoric iron, 1876, i., 27.
- examination of gases from the meteorite of Feb. 12, 1875, 1876, i., 352.
- the gases contained in meteorites, 1877, i., 289, 702.
- new process for the electrical deposition of metals, and for constructing metal-covered glass specula, 1878, A., 251.
- Wright, Charles Romley Alder**, isomeric terpenes and their derivatives, Part I., 1873, 549.
- isomeric terpenes and their derivatives. Part II. On cymenes from various sources, 1873, 686.
- action of hydrochloric acid on codeine, 1873, 916.
- note on the action of zinc chloride on codeine, 1874, 107.
- hydrochloride of narceine, 1874, 109.
- isomeric terpenes and their derivatives. Part III. On the essential oils of wormwood and citronella, 1874, 317.
- action of organic acids and their anhydrides on the natural alkaloids, Part I., 1874, 1031.
- relations between affinity and dissected (structural) formulae, 1875, 228.
- the alkaloids of the Aconites. Part I. On the crystallisable alkaloids contained in *Aconitum Napellus*, 1877, i., 143.
- on narcotine, cotarnine, and hydrocotarnine. Part V. On new cotarnine derivatives and on nor-opianic acid, 1877, ii., 525.
- the alkaloids of the Veratrum. Part III. The alkaloids of *Veratrum viride*, 1879, T., 421.
- Wright, Charles Romley Alder**, determination of chemical affinity in terms of electromotive force, 1881, A., 959.
- Wright, Charles Romley Alder**, and **T. Lambert**, isomeric terpenes and their derivatives. Part IV. On cajeput oil, 1874, 619.
- Wright, Charles Romley Alder**, and **Arthur Pearson Luff**, first report to the Chemical Society on "Researches on some points in chemical dynamics," 1878, T., 1. Second report, 1878, T., 504.
- the alkaloids of the Aconites. Part II. Alkaloids contained in *Aconitum ferox*, 1878, T., 151.
- the alkaloids of the Aconites. Part III., 1878, T., 318.
- the alkaloids of the Veratrum. Part I. The alkaloids of *Veratrum Sabadilla* (*Asagracea officinalis*), 1878, T., 338.
- the alkaloids of the Aconites. Part IV. The alkaloids of Japanese aconite roots, 1879, T., 387.
- the alkaloids of the Veratrum. Part II. The alkaloids of *Veratrum album*, 1879, T., 405.
- Wright, Charles Romley Alder**, and **Albert Edward Menke**, appendix to the alkaloids of the Aconites. Part IV. The alkaloids of Japanese aconite roots, 1879, T., 399.
- notes on manganese dioxide, 1880, T., 22.
- Wright, Charles Romley Alder**, and **Geo. Patterson**, citric acid as a constituent of the juice of unripe mulberries, 1878, T., 78.
- Wright, Charles Romley Alder**, and **Charles Henry Piesse**, note on otto of limes, 1877, ii., 548.
- Wright, Charles Romley Alder**, and **Edward Henry Rennie**, on the action of benzoyl chloride on morphine, 1880, T., 609.
- determination of chemical affinity in terms of electromotive force, 1880, A., 686.
- note on the sweet principle of *Smilax glyciphylla*, 1881, T., 237.
- Wright, Charles Romley Alder**, **Arthur Pearson Luff**, and **Edward Henry Rennie**, third report to the Chemical Society on "Researches on some points in chemical dynamics," 1879, T., 475.
- Wright, Charles Romley Alder**, **Edward Henry Rennie**, and **Albert Edward Menke**, fourth report to the Chemical

- Society on "Researches on some points in chemical dynamics," 1880, T., 757.
- Wright, Charles Rowley Alder.** See also *George Henry Beckett, E. Ludwig Mayer, William Chandler Roberts-Austen.*
- Wright, Lewis Thompson,** on the occurrence of certain nitrogen acids amongst the products of combustion of coal-gas and hydrogen flames, 1879, T., 42.
- note on the products of combustion of coal-gas, 1880, T., 422.
- on ammonium nitrite, and the reaction between hydrogen and nitric oxide in presence of spongy platinum, 1881, T., 357.
- Wrightson, Francis,** quantitative estimation of metals by electrolysis, 1877, i., 340.
- Wroblewski, Eduard A.,** haloid derivatives of toluene, 1874, 50.
- constitution of benzene derivatives, 1875, 58, 886; 1876, ii., 510; 1878, A., 977; 1879, A., 526; 1882, A., 952.
- decomposition of some diazo-compounds by water, 1875, 73.
- observations on Hübner and Grete's researches on *m*-bromotoluene, 1875, 155.
- synthesis of *m*-ethyltoluene, 1875, 455.
- bromonitrotoluenes, 1875, 888.
- synthesis of *s*-ethyl-dimethylbenzene, 1876, ii., 406.
- a new xylidine, 1878, A., 54.
- mineral waters of the Couban in the Caucasus, 1879, A., 125.
- separation of *o*-xylene from its isomerides, and a new xylidine, 1879, A., 919.
- separation of *o*-xylene from its isomerides, 1880, A., 240.
- oxidation of nitroxyline and xylidine, 1881, A., 420.
- isomeric xylidines, 1881, A., 433.
- oxidation of *s*-nitroxyline, 1882, A., 954.
- Wroblewski, Siegmund A. von,** diffusion of gases in liquid, viscous, and solid substances, 1878, A., 369.
- application of photometry to the study of diffusion phenomena in liquids, 1881, A., 956.
- combination of carbonic anhydride and water, 1882, A., 692.
- law of solubility of carbonic anhydride in water at high pressures, 1882, A., 1021.
- Wroblewski, Siegmund A. von,** composition of hydrated carbonic acid, 1882, A., 1026.
- influence of the quantity of gas dissolved in a liquid on the surface tension of the latter, 1882, A., 1259.
- Wüllner, Friedrich Hugo Anton Adolph,** spectra of gases in Geissler's tubes, 1873, 242; 1874, 113; 1875, 527.
- specific heat of water according to the investigations of W. von Münchenhausen, 1878, A., 104.
- relation between the specific heat at a constant volume, the temperature, and the conductivity of gases for heat, 1879, A., 2.
- supposed heating of ice, 1881, A., 778.
- spectrum of hydrogen and acetylene, 1882, A., 129.
- spectra of carbon compounds, 1882, A., 130.
- Wüst, Albert,** comparison of various milk coolers, 1880, A., 357.
- Wulfsberg, Nils Gregers Ingvald,** aspidospermine and paytine, 1881, A., 108.
- Wunder, Justin,** the absorption spectra of ultramarine, 1876, i., 864.
- Wunderlich, F.,** separation of quartz from silicates, 1882, A., 894.
- Wundt, E.,** derivatives of phenylenediamines, 1878, A., 667.
- Wurm, Emanuel,** manufacture of vinegar by means of bacteria, 1880, A., 334; 1881, A., 128.
- Wurster, Casimir,** fulminic acid, 1874, 255.
- constitution of dibromobenzenes, 1874, 369.
- derivatives of liquid dibromobenzene, 1874, 369.
- constitution of dinitrobenzene, 1874, 467.
- constitution of the di-substitution products of benzene, 1875, 756.
- sizing of paper, 1878, A., 184, 626.
- estimation of the mineral matter in paper, 1878, A., 528.
- quantitative estimation of the colour in paper, 1878, A., 823.
- quantitative estimation of starch in paper, 1879, A., 180.
- nitrodimethylaniline, 1879, A., 626.
- methyl derivatives of *p*-phenylenediamine, 1879, A., 626.
- colouring matters obtained by the oxidation of di- and tetra-methyl-*p*-phenylenediamines, 1880, A., 111.

- Wurster, Casimir, and Gottwalt Ambühl**, constitution of the diphenylenediamines, 1874, 588.
- Wurster, Casimir, and Alfr. Béran**, action of nitric acid on tribromobenzene, 1880, A., 106.
- *p*-bromodimethylaniline, 1880, A., 108.
- Wurster, Casimir, and Ulrich Grubemann**, conversion of dinitrobenzene into dibromobenzene, 1874, 691.
- Wurster, Casimir, and Henry Forster Morley**, tetramethyl-*m*-phenylenediamine, 1880, A., 111.
- Wurster, Casimir, and Emilio Nölting**, resorcin from dinitrobenzene, 1874, 1163.
- — — constitution of some substitution derivatives of benzene, 1876, i., 389.
- Wurster, Casimir, and Carl Riedel**, dimethyl-*m*-toluidine derivatives, 1880, A., 109.
- Wurster, Casimir, and Ludwig Roser**, ferro- and ferri-cyanides of certain tertiary bases, 1880, A., 98.
- Wurster, Casimir, and Anton Scheibe**, bromodimethylaniline, 1880, A., 107.
- Wurster, Casimir, and Eugen Schobig**, action of oxidising agents on tetramethyl-*p*-phenylenediamine, 1880, A., 111.
- Wurster, Casimir, and Rudolf Sendtner**, dimethyl-*p*-phenylenediamine derivatives, 1880, A., 110.
- Wurster, Casimir**. See also *Rudolph Fittig, Victor Meyer*.
- Wurtz, Charles Adolphe**, the vapour density of phosphorus pentachloride, 1873, 726.
- aldol, 1873, 876; 1876, ii., 65.
- paralldol, a polymeric modification of aldol, 1876, ii., 621.
- a polymerisation of ethylene oxide, 1877, i., 291; 1878, A., 719.
- rosaniline and fuchsine, 1877, i., 322.
- composition of certain phosphites, 1877, i., 440.
- some derivatives of dialdol, 1877, i., 588.
- on the law of Avogadro and Ampère, 1877, ii., 404, 569; 1878, A., 702.
- ethylate of chloral, 1877, ii., 878.
- on the constitution of matter in the gaseous state, 1879, T., 1.
- bases derived from aldol-ammonia, 1879, A., 704, 780.
- chloral hydrate, 1879, A., 914.
- Wurtz, Charles Adolphe**, temperature of the decomposition of vapours, 1880, A., 293.
- heat of formation of chloral hydrate, 1880, A., 293, 435, 604.
- copper hydride, 1880, A., 299.
- reply to Berthelot on the heat of formation of chloral hydrate, 1880, A., 435.
- papain, 1881, A., 58, 750.
- an oxygenated basic derivative of aldol, 1881, A., 246.
- preparation of aldol, 1882, A., 488.
- new alcohol from dialdane, 1882, A., 489.
- action of soluble ferments, 1882, A., 536.
- action of ethylene chlorhydrin on pyridine bases and on quinoline, 1882, A., 1303.
- Wurtz, Charles Adolphe, and E. Bouchut**, digestive ferment of *Carica Papaya*, 1879, A., 1048.
- Wurtz, Frédéric**, action of iodine on uric acid, 1874, 368.
- Wurtz, Frédéric**. See also *Jules Lefort, Charles Frédéric Schlagdenhauffen*.
- Wyndham, Thomas Heathcote Gerald**, obituary notice of, 1877, i., 510.
- Wyruboff, Gregoire N.**, researches on the ferrocyanides, 1877, i., 190.
- on two new ferri-cyanides and a thiocyanoplatinate of potassium, 1877, ii., 869.
- note on platinum thiocyanate, 1880, A., 618.
- potassium and ammonium tetrachromates, 1881, A., 352.
- a curious case of isomorphous admixture: trichromates and tetrachromates of potassium and of ammonium, 1882, A., 146.
- the geometrical relations which exist between many alkaline chromates and also between many alkaline sulphates, 1882, A., 147.
- Wyss, Georg**, action of hydrogen sulphide on chloral hydrate, 1874, 460.
- glyoxaline, 1877, i., 299; 1878, A., 23.
- Wyss, Georg**. See also *Robert Gnehm, Eduard Schär*.

## Y.

- Yardley, H. B.**, determination of available sulphur in spent oxide, 1875, 384.
- Yōshida, Hikorokurō**, maltose, 1881, A., 568.
- Yōshida, Hikorokurō**. See also *Robert William Atkinson*.



- Young, James**, improvement in the method of obtaining hydrocarbons, 1873, 956.
- Young, James**, and **George Forbes**, experimental determination of the velocity of white and coloured light, 1881, A., 861.
- Young, John**. See *Thomas Edward Thorpe*.
- Young, Sydney**, note on the precipitation of iron with ammonium succinate, 1880, T., 674.
- note on the formation of an alcoholic fluoride, 1881, T., 489.
- Young, T. Graham**, the gas of the "Grotta del Cane," near Naples, 1878, T., 51.
- Young, William Charles**, production of sulphuric acid by combustion of coal-gas, 1877, ii., 110, 948; 1880, A., 355.
- estimation of alum in bread, 1877, ii., 510.
- estimation of free sulphuric acid in vinegar, etc., 1877, ii., 917.
- note on the detection of alum in flour by the logwood test, 1879, A., 483.
- Yvon, Paul**, new method for the determination of urea, 1873, 411.
- crystalline mercurous iodide, 1873, 1105.
- iodide of bismuth and potassium as a test for alkaloids, 1874, 1105.
- action of sodic and calcic hypochlorites upon urea, 1877, ii., 226.
- the nitrates of bismuth, 1877, ii., 572.
- comparative chemical examination of *Thapsia germanica* and *Thapsia Sylphium*, 1877, ii., 914.
- composition of the cephalo-rachidian liquid, 1878, A., 83.
- Yvon-Villargeau, Antoine Joseph François**, ratio of the specific heats in a gas having monatomic molecules, 1876, ii., 374.

## Z.

- Zabudsky, Grigorijs A.**, carbohydrate from the chemically combined carbon in cast iron, and the estimation of that carbon in cast iron, wrought iron, and steel, 1882, A., 427.
- action of mercuric chloride on cast iron, 1882, A., 660.
- Zacharias, Eduard**, chemical nature of the cytoblast, 1882, A., 422.
- Zacharias, Eduard**. See also *Ferdinand Wibel*.

- Zagumenny, Alexander A.**, deoxybenzoin, 1873, 502.
- dinitrobenzile, 1873, 502.
- reduction of benzoin, 1875, 1191.
- diphenylcarbinol and some of its derivatives, 1877, i., 459.
- on some derivatives of deoxybenzoin, 1877, ii., 194.
- tetraphenylethane, 1881, A., 434.
- benzpinacone and benzpinacolin, 1881, A., 813.
- Zaleski, K.**, the identity of Walter's moringic acid with oleic acid, 1875, 355.
- Zalomanoff, R.**, new method of ascertaining the absorptive power of a soil, 1881, A., 935.
- Zander, Albert**, specific volumes of liquids, 1882, A., 1259.
- Zander, Otto**, amidobenzenedisulphonic acids, 1880, A., 122.
- Zanni, Jos.** See *Wilhelm Clemens Lossen*.
- Zavaglia, S.**, evaporation of automatically weighed quantities of liquid, 1874, 653.
- Zay, Wm.**, process for the preservation of albumin for photographic purposes, 1873, 423.
- Zdrawkowitsch, Milan R.**, preparation of platinum-black by means of glycerin, 1876, ii., 47.
- Zecchini, Mario**, test for distinguishing cotton-seed oil from olive oil, 1882, A., 662.
- Zecchini, Mario**. See also *Alfonso Cossa*.
- Zehenter, Josef**, derivatives of  $\alpha$ -dihydroxybenzoic acid, 1882, A., 193.
- Zeidler, Franz**, oxidation of organic bodies, 1876, i., 363.
- behaviour of various amylenes to oxidising agents, 1877, ii., 421.
- allylacetate ether and its derivatives, 1877, ii., 437.
- Zeidler, Franz**, and **Othmar Zeidler**, action of oxidising agents on the olefines, 1879, A., 907.
- Zeidler, Othmar**, compounds of chloral with bromobenzene and chlorobenzene, 1875, 148.
- action of iodine and mercuric oxide on anthracene, 1876, ii., 80.
- Zeisel, Simon**, action of sulphuric acid on acetylene, 1878, A., 653.
- Zeisel, Simon**. See also *Adolf Lieben*.
- Zeitler, Franz Xaver**. See *Theodor Weyl*.
- Zeller, A.**, on the preparation of glycol, 1875, 442.

- Zeller, A.**, and *Carl Gustav Hüfner*, a new method of preparing glycol, 1875, 442, 1171.
- Zellner, Albin**, black mica from Tschoborkul in Siberia, 1874, 553.
- Zeltner, Johann**, preparation of violet ultramarine, 1878, A., 771.
- Zenger, H.**, a neglected source of iodine in fresh water Alga, 1876, i., 876.
- Zenger, Karel Václav**, spectroscopic observations with monochromatic light, 1882, A., 677.
- Zenoni, E.** See *Tullio Brugnatelli*.
- Zepharovich, Victor Leopold (Ritter von)**, syngenite, 1874, 133.
- atacamite crystals from South Australia, 1874, 555.
- on a metamorphosed felspar from Čkyn in Bohemia, 1875, 545.
- bournonite from Waldenstein, Carinthia, and from Pöbham, 1877, i., 583.
- red vanadinite from the lead works on the Obir, near Kappel, 1877, i., 583.
- sulphur from Cianciana and Lercara in Sicily, 1877, i., 583.
- crystallo-optical investigation of certain camphor derivatives, 1877, i., 594.
- galenite from Habach in Salzburg, 1878, A., 207.
- thuringite from the Zirmsee in Carinthia, 1878, A., 391.
- yellow dolomite from Bleiberg, 1879, A., 19.
- magnetite from Monte Mulatto, South Tyrol, 1879, A., 23.
- mirabilite from Aussee, 1879, A., 23.
- new mineral occurrences in the iron ore district of Moraviczka in the Banat, 1879, A., 363.
- halotrichite and melanterite from Idria, 1881, A., 232.
- enargite from the Matzenköpf near Brixlegg, in Tyrol, 1881, A., 397.
- crystalline form of silver iodide, 1881, A., 398.
- mineralogical notices, 1881, A., 995.
- crystalline forms of dibromocamphor, 1882, A., 865.
- Zerrenner, H.**, method of preventing house fungus, 1879, A., 1080.
- Zerrenner, Carl**, on crystal crusts or shells, 1876, i., 54.
- Zetter, Georg**, chlorine and bromine derivatives of phenanthrene, 1878, A., 510.
- Zetter, Georg.** See also *Victor Merz*.
- Zickendrath, Ernst**, kerstanite from Langenschwalbach, 1876, i., 196.
- Ziegeler, Gustav**, estimation of sulphuric acid, 1882, A., 894.
- Ziegler, A.**, and *Werner Kelbe*, synthesis of *m*-isopropyltoluene, 1880, A., 877.
- Ziegler, Ernst Albrecht**, action in the animal organism of camphor cymene, 1874, 594.
- Ziegler, Ernst Albrecht.** See also *Marcellus Nencki*.
- Ziegler, Hermann**, the highest daily rainfall in Germany, 1882, A., 87.
- Ziegler, Joseph**, some compounds of the leuco-base from cuminol and dimethylaniline, 1880, A., 640.
- Ziegler, Joseph.** See also *Otto Fischer*.
- Zierold, Georg.** See *Eugen Sell*.
- Zimmermann, A.** See *Wilhelm Michler*.
- Zimmermann, Carl**, constitution of ethyl phosphite and phosphorous acid, 1874, 655; 1875, 440.
- silver compounds of melamine, 1874, 684.
- Zimmermann, Hennig Christoph Julius**, phenylbetaine or dimethylphenylglycocol, 1880, A., 162.
- azo-compounds of *p*-mononitrodiphenyl, 1881, A., 175.
- derivatives of *p*-amidodiphenyl (*xenylamine*), 1881, A., 175.
- action of ethyl chloracetate on phenylenediamine, 1882, A., 957.
- Zimmermann, Hennig Christoph Julius.** See also *Siegmund Gabriel*.
- Zimmermann, Julius Ludwig Clemens**, separation of the heavy metals of the ammonium sulphide group, 1880, A., 188; 1881, A., 122.
- products of decomposition and metamorphosis of uranyl sulphide, 1881, A., 79.
- action of uranyl salts on turmeric paper, 1881, A., 122.
- uranates, 1881, A., 686; 1882, A., 1269.
- use of potassium permanganate in volumetric analysis, 1881, A., 759.
- vapour density of uranium tetrabromide and chloride, 1882, A., 143.
- properties and atomic weight of uranium, 1882, A., 1031.
- Zimmermann, O.** See *Adolph Claus*.
- Zimmermann, Robert.** See *Wilhelm Michler*.
- Zincke, Ernst Carl Theodor**, action of benzyl chloride on aromatic hydrocarbons, 1873, 272.

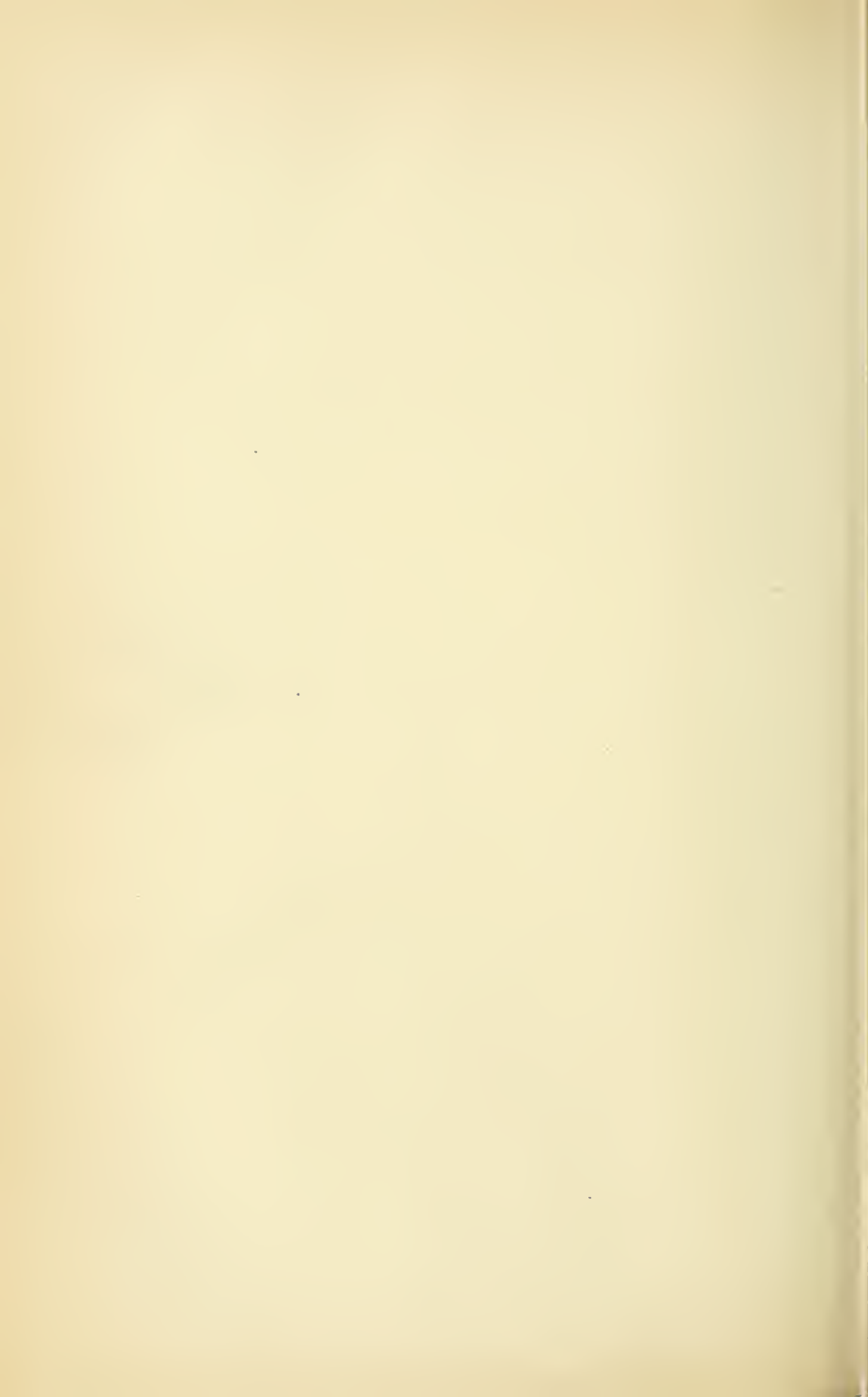
- Zincke, Ernst Carl Theodor**, a new series of aromatic hydrocarbons, 1873, 631.  
 — action of zinc on a mixture of aromatic halogen compounds and aromatic hydrocarbons, 1873, 632.  
 — formation of anthracene from benzyl chloride, 1874, 690.  
 — the reduction of benzoyl*isophthalic* acid, 1875, 1024.  
 —  $\alpha$ - and  $\beta$ -dibenzylbenzenes, 1876, i., 703.  
 — compounds of the hydrobenzoin and stilbene series, 1876, ii., 634; 1880, A., 114.  
 — compounds of the hydrobenzoin group, 1877, ii., 622.  
 — action of ammonia and amines on quinones, 1880, A., 48; 1881, A., 595, 915; 1882, A., 735, 967.  
 — physical isomerism with special reference to hydro- and *isohydro*-benzoins, 1880, A., 118.
- Zincke, Ernst Carl Theodor**, and **Friedrich Sintenis**, dinitrobromobenzene and phenylenediamine, 1873, 167.  
 — on Griess' phenylenediamine and dibromobenzene, 1873, 640.
- Zincke, Ernst Carl Theodor**. See also **August Breuer**, **Carl Forst**, **Paul Hunaeus**, **H. Plascuda**, **Albert Rinne**, **Ferdinand Rotering**, **Rudolph Symons**, **Wilhelm Thörner**, **Carl Wachendorff**, **E. Weber**.
- Zingler, Maximilian**, improvements in the manufacture of varnish, 1877, ii., 244.
- Zingler, Maximilian**. See also **Charles Thomas Kingzett**.
- Zinin, Nikolaus N.**, on oxylepidene, 1873, 489.  
 — decomposition of benzoin by heat, 1874, 262.  
 — derivatives of lepidene, 1875, 1004.  
 — *isolepidene*, 1877, ii., 787.  
 — *amaric acid*, 1878, A., 152.
- Zinno, Silvestro**, iodarsenic acid, a compound of iodine with arsenious acid, and its compounds with basic oxides and alkaline iodides, 1874, 130.  
 — action of calcium hypochlorite on soluble cyanides, simple and double, 1876, i., 377.
- Zinoffsky, Oscar**, estimation of emetine, aconitine, and nicotine, 1874, 497.
- Zirkel, Ferdinand**, fall of volcanic ash in Norway, 1875, 744.
- Zitowitsch**. See **Adolf Wilhelm Hermann Kolbe**.
- Zmerzlikar, Franz**, division of the nitrogen of barley among the products of brewing, 1876, ii., 345.
- Znatowicz, Bronistas de**. See **Felix Wreden**.
- Zoebl, Anton**, sulphurous acid as a remedy for bunt in wheat, 1880, A., 572.  
 — manuring experiments with summer barley, 1881, A., 1077.
- Zöller, Philipp**, carbon bisulphide as a disinfectant, 1876, ii., 348, 679.  
 — potassium xanthate as an antiseptic, 1877, ii., 954.  
 — globulin substance in potatoes, 1880, A., 723.  
 — xanthic acid as a precipitant for albumin, 1880, A., 765.
- Zöller, Philipp**, and **Ernst August Grete**, amylxanthate of potassium, 1875, 1255.  
 — on potassium xanthate as a remedy against phyloxera, 1876, i., 106.  
 — production of ammonium nitrite, 1878, A., 372.
- Zorn, W.**, cinchonine and allied compounds, 1874, 482.  
 — nitrosylsilver or silver hyponitrite, 1878, A., 12.  
 — diazo-compounds of the fatty series, 1879, A., 221.  
 — action of nitrosylsilver on organic bodies, 1879, A., 309.  
 — new method of forming hyponitrites and hydroxylamine, 1880, A., 4.  
 — basicity of hyponitrous acid, 1882, A., 926.  
 — new method of preparing hyponitrous acid, 1882, A., 1027.
- Zotta, Victor von**, contributions to our knowledge of glycerin ether, 1875, 246.  
 — diethylurea, 1876, i., 569.  
 — action of potassium iodide on  $\beta$ -dibromopropionic acid, 1878, A., 782.
- Zuckschwerdt, Sylvester**, action of sulphur dioxide on zinc ethide, 1874, 674.  
 — dinitroethylie acid, 1874, 677.  
 — products of the oxidation of ethylsulphinic (ethylsulphurous) acid by nitric acid, 1875, 343.
- Zuckschwerdt, Sylvester**, and **Benjamin West**, estimation of potassium as platinumochloride, 1881, A., 941.
- Züblin, Heinrich**, synthesis of *isosuccinic acid*, 1876, A., 783.  
 — the halogens, 1882, A., 7.
- Züblin, Heinrich**. See also **Victor Meyer**.
- Züblin, Jules**, *n*-nitrobutane, 1878, A., 284.  
 — primary *isonitrobutane*, 1878, A., 284.  
 — azobenzeneacetonecarbonic acid, 1878, A., 879.
- Züblin, Jules**. See also **Victor Meyer**.

- Zuelzer, Wilhelm**, on the relative quantities of some constituents of urine, 1876, i., 726.  
— relation of phosphoric acid to nitrogen in urine, 1877, ii., 205.
- Zulkowski, Karl**, effect of indiarubber tubes on the illuminating power of coal-gas, 1873, 300.  
— an apparatus for the determination of nitrogen, 1876, ii., 651.  
— constitution of corallin, 1877, ii., 480; 1878, A., 872; 1882, A., 1290.  
— formation of rosolic acid from cresol and phenol, 1877, ii., 888.  
— constituents of aurin, 1878, A., 505; 1879, A., 58.  
— diastase and beet mucilage, 1879, A., 660.
- Zulkowski, Karl**, modification of Dumas' method for estimating nitrogen, 1880, A., 753.  
— action of glycerol on starch, 1880, A., 865.  
— crystallisable constituents of corallin, 1881, A., 725, 899.
- Zulkowski, Karl**, and **Edmund König**, unorganised ferments, 1876, i., 958.
- Zulkowski, Karl**, and **Gustav Renner**, composition of diastase and beet mucilage, 1880, A., 561.
- Zuntz, Nathan**, respiration of the mammalian foetus, 1877, ii., 502.
- Zuntz, Nathan**. See also *Friedrich Joseph (Freiherr) von Mering*.









A COLLECTIVE INDEX  
OF THE  
TRANSACTIONS AND ABSTRACTS  
OF  
THE CHEMICAL SOCIETY

1873—1882

---

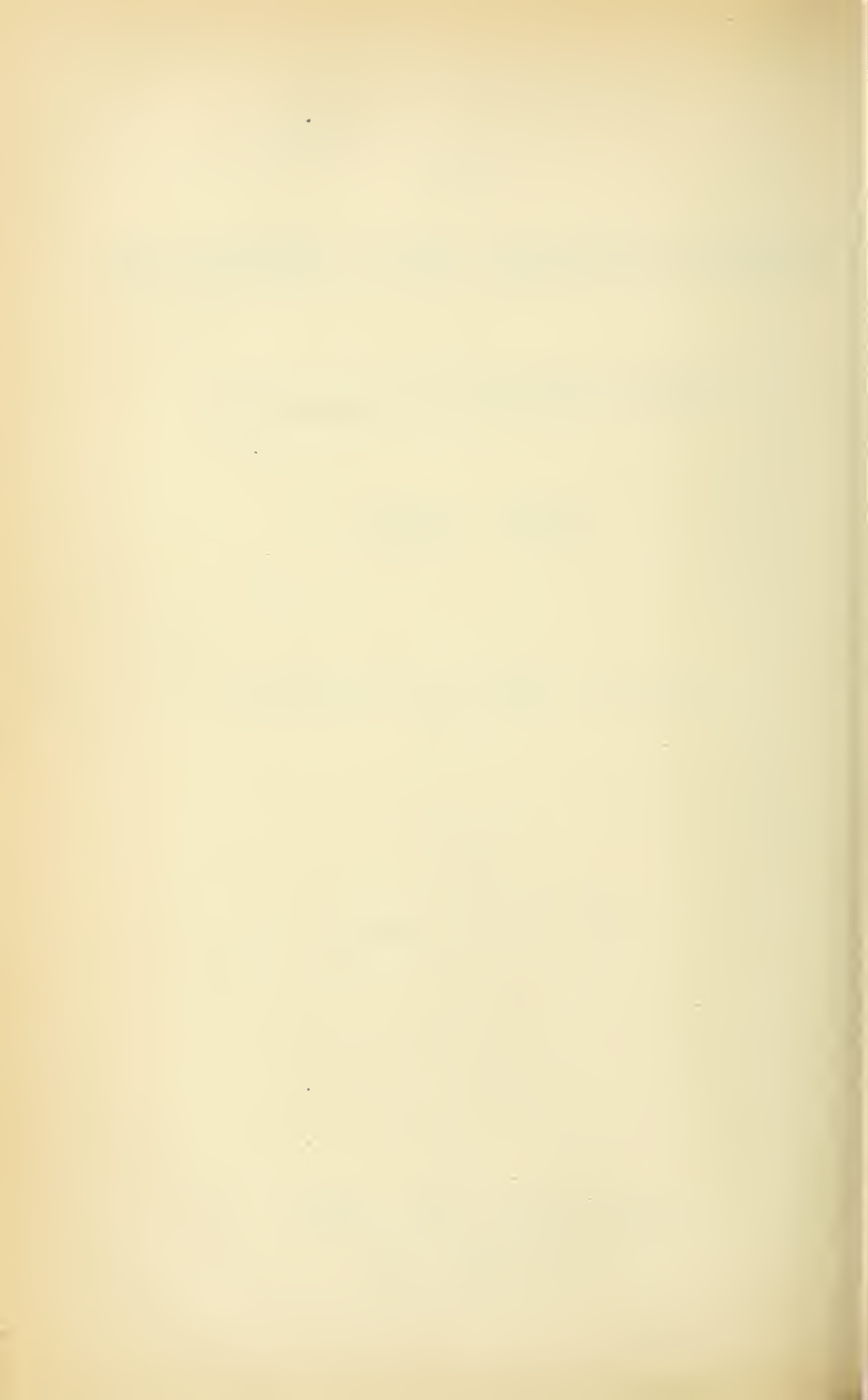
PART II—INDEX OF SUBJECTS

---

COMPILED  
BY  
MARGARET D. DOUGAL

LONDON : GURNEY AND JACKSON  
(*Successors to J. van Voorst*)  
1 PATERNOSTER ROW





# INDEX OF SUBJECTS.

## A.

- Aarite** (PISANI), 1873, 479.
- Abietene.** See *n*-Heptane.
- Abietic acid** (EMMERLING), 1880, A., 264; (KELBE), 1880, A., 670.  
distillation of, with zinc-dust (CIAMICIAN), 1878, A., 438.
- Abriachanite**, occurrence and localities of (HEDDLE; AITKIN), 1882, A., 288.
- Abscess**, composition and possible origin of the gas from a pyæmic (HÜFNER), 1876, ii., 212.
- Absinthol** from wormwood oil (WRIGHT), 1874, I., 317; (BEILSTEIN and KUPFFER), 1874, 153.  
action of phosphorus *pentasulphide* and of zinc chloride on (WRIGHT), 1874, 319.
- Absorption spectrum.** See Photochemistry.
- Abstractors**, instructions to, 1879, T., 276; 1882, T., 247.
- Acediamine.** See Ethenylamidine.
- Acenaphthene** and naphthalic acid (BEHR and VAN DORP), 1873, 632; 1874, 1167.  
action of heated lead oxide on (BEHR and VAN DORP), 1873, 1135.
- Acenaphthylene** (*acetylenacnaphthalene*) (BEHR and VAN DORP), 1874, 1168.
- Acet-.** See also Aceto- and Acetyl-.
- Acetal**, production of (ENGEL and DE GIRARD), 1880, A., 458.  
chlor-(*chlorodithoxyethane*) (PATERNÒ and MAZZARA), 1873, 1217.  
preparation of (KLIEN), 1877, i., 291.  
action of bleaching powder on (SCHMITT and GOLDBERG), 1879, A., 910; (GOLDBERG), 1882, A., 29.  
*trichlor-* (PATERNÒ and PISATI), 1873, 158; (BYASSON), 1878, A., 966.
- Acetals**, chlorinated, and some of their derivatives (KREY), 1877, i., 295.
- Acetaldehyde** prepared by ozonised air (ANON.), 1874, 836.  
formation of, in alcoholic fermentation (SCHÜTZENBERGER and DESTREM), 1879, A., 551.  
formation of, from derivatives of benzene (ERLENMEYER), 1876, ii., 184.  
recovery of, in the manufacture of sugar of lead (DOLLFUS), 1876, ii., 228.  
thermochemistry of (BERTHELOT), 1876, i., 869; (BERTHELOT and OGIER), 1881, A., 675.  
action of heat on ordinary (BERTHELOT), 1875, 347.  
action of, on acetamide (TAWILDAROFF), 1873, 58.  
action of acetic bromide on (TAWILDAROFF), 1874, 1080.  
action of bromine on (PINNER), 1875, 1174.  
action of bromine and chlorine on (PINNER), 1876, i., 548.  
condensation of, with ethylic acetate (CLAISEN), 1881, A., 465.  
action of hydrochloric acid on (BORODIN), 1873, 58; (HANRIOT), 1881, A., 404.  
action of phosphorus *pentabromide* on (TAWILDAROFF), 1874, 789.  
action of zinc ethyl on (WAGNER), 1876, ii., 395.  
collidine from (WISCHNEGRADSKY), 1880, A., 54.  
conversion of, into mercaptan (BÖRTINGER), 1879, A., 451.  
reaction (TOLLENS), 1882, A., 107.  
silver solution as a reagent for (TOLLENS), 1882, A., 1329.  
additive products of (SCHIFF), 1876, i., 894; ii., 285.  
compounds (NENCKI), 1874, 458; (HEPP and SPIESS), 1877, i., 314; (HEPP), 1878, A., 66.

- Acetaldehyde** derivatives of amines and carbamides (SCHIFF), 1878, A., 668; (LADENBURG), 1878, A., 669. sulphites and the action of sodium sulphite on ethylenic dichloride (BUNTE), 1874, 353.
- Acetaldehyde**, chlor-, and hydrate and its polymeride (NATTERER), 1882, A., 1045.  
action of, on benzene (HEPP), 1874, 368.  
derivatives of aromatic hydrocarbons and (HEPP), 1875, 361.  
dichlor-, and its hydrate (FRIEDRICH), 1881, A., 407.  
crystalline modification of (JACOBSEN), 1875, 630.  
trichlor-. See Chloral.  
thio- (KLINGER), 1877, ii., 305; (BÖTTINGER), 1879, A., 452.  
action of potassium permanganate on (GUARESCHI), 1878, A., 859; 1879, A., 710.
- Orthoacetaldehyde**, tribrom-. See Bromal.  
trichlor-. See Chloral hydrate.
- Metacetaldehyde** (*metalddehyde*) (HARRIOT and OECONOMIDES), 1882, A., 31.
- Paracetaldehyde** (*paralddehyde*), dichloro- (JACOBSEN), 1875, 631.
- Acetaldehydephenylhydrazine** (*ethylidenephenylhydrazine*) (FISCHER), 1878, A., 302.
- Acetamide** (v. HOFMANN), 1882, A., 822.  
action of aldehyde on (TAWILDAROFF), 1873, 58.  
action of bromine in alkaline solution on (v. HOFMANN), 1882, A., 950.  
action of chlorodinitrobenzene on (WILLGERODT), 1877, i., 473.  
action of phosphorus pentachloride on (WALLACH), 1875, 884.  
behaviour of, when heated with sodium alcohol (HARTLEY), 1873, 991.  
mercury derivative of (OPPENHEIM and PFAFF), 1874, 891.
- Acetamide**, brom- (KESSEL), 1879, A., 221.  
dibrom- (BENEDIKT), 1878, A., 499.  
chlor-, action of potassium cyanide on (SCHIFF and SPECIALE), 1880, A., 103.  
dichlor- (SCHIFF and SPECIALE), 1880, A., 102.  
trichlor-, action of chlorine on (STEINER), 1882, A., 1281.  
action of phosphorus pentachloride on (WALLACH), 1875, 883; 1877, ii., 182.
- Acetamide**, *mono*-, *di*-, and *tri*-chlor- (BISSCHOPINCK), 1873, 1129.  
chlorodibrom- and dichlorobrom- (NEUMEISTER), 1882, A., 944.
- Acetamidine**. See Ethenylamidine.
- m-Acetamidanthraquinone** (v. PERGER), 1880, A., 49; (LIEBERMANN and HOERMANN), 1882, A., 860.
- o-Acetamidobenzoic acid** and its salts (BEDSON and KING), 1880, T., 752; (JACKSON), 1881, A., 734.  
brom- (JACKSON), 1881, A., 734.
- p-Acetamidobenzophenone** (*acetylbenzoylaniline*) (DOEBNER and WEISS), 1882, A., 176.
- Acetamidocumic acid** (FILETTI), 1881, A., 424.
- p-Acetamidodiphenyl** (OSTEN), 1874, 581.
- Acetamido-2-hydroxyanthraquinones**, 1- and 2- (v. PERGER), 1879, A., 254.
- Acetamidophenol** and its reactions (LADENBURG), 1877, i., 302; ii., 752.
- Acetamidophenols**, and their preparation (MORSE), 1878, A., 416.
- o-Acetamidophenylacetylene** (v. BAeyer and LANDSEERG), 1882, A., 622.
- p-Acetamido-β-phenylpropionic acid** (GABRIEL and STEUDEMANN), 1882, A., 1073.
- α-Acetamidosalicylic acid** and its salts (HÜBNER), 1879, A., 381.
- Acetamines**, aromatic, oxidation of, by potassium permanganate (v. HOFMANN), 1877, i., 90.
- Acetanilide** (BERNTHSEN), 1877, i., 619.  
formation of (MENSCHUTKIN), 1882, A., 1084.  
action of dehydrating agents on (JACKSON), 1876, i., 603.  
action of ethylsulphuric chloride on (WENGHÖFFER), 1878, A., 298.  
action of nitric acid on (KÖRNER), 1876, i., 209.  
action of nitrous acid on (FISCHER), 1876, ii., 205.  
action of phosphorus pentachloride on (WALLACH and HOFFMANN), 1877, ii., 187.  
action of succinic chloride on (HÜBNER), 1878, A., 407.  
action of sulphur chloride on (SCHMIDT), 1878, A., 974.  
decomposition of (MENSCHUTKIN), 1882, A., 1084.  
products obtained by distilling, with sodium phenate (WEITH), 1873, 1240.  
mercury derivative of (OPPENHEIM and PFAFF), 1874, 891.

**Acetanilide**, *p*-brom- (REMMERS), 1874, 696.  
 crystalline form of (PANEBIANCO), 1880, A., 105.  
 purification of (GÜRKE), 1876, i., 400.  
*o*- and *p*-brom-, preparation and properties of (KÖRNER), 1876, i., 212.  
 2:4-*di*- and 2:4:6-*tri*-brom-, 4:2-bromonitr-, 4:6:2-dibromonitr-, and 2:4:6:3-*tetr*bromonitr- (REMMERS), 1874, 696.  
*m*-chlor-, action of chlorine on (BEILSTEIN), 1878, A., 585.  
 2:4-*dichlor*- (WITT), 1876, i., 264; (WENGHÖFER), 1878, A., 298.  
 isomeric *dichlor*- (BEILSTEIN and KURBATOFF), 1875, 1037; 1876, i., 712; 1878, A., 299; 1879, A., 143.  
 isomeric *trichlor*- (BEILSTEIN and KURBATOFF), 1879, A., 143.  
 2:3:4:6-*tetrachlor*- (BEILSTEIN and KURBATOFF), 1879, A., 143.  
*ω*-chlor- (TOMMASI), 1874, 624; (WALLACH and KAMENSKI), 1880, A., 547.  
 action of ammonia on (TOMMASI), 1874, 624.  
 constitution of the hydroxyl-derivatives of (TOMMASI), 1874, 627.  
*ω*-*dichlor*- (ČECH), 1876, i., 376; ii., 66, 184; 1878, A., 51.  
*ω*-*trichlor*-, preparation of, and the action of nitric acid on (TOMMASI and MELDOLA), 1874, 315.  
 action of phosphorus *pentachloride* on (WALLACH and KAMENSKI), 1880, A., 547.  
 isomeric chloronitr- (BEILSTEIN and KURBATOFF), 1875, 1037; 1876, ii., 308.  
 3:5:2- and 3:5:4-*dichloronitr*- (BEILSTEIN and KURBATOFF), 1878, A., 974.  
*p*-iod- (MICHAEL and NORTON), 1878, A., 406.  
 nitr-, action of potassium nitrite on (MÜLLER-JACOBS), 1878, A., 140.  
*o*-nitr- (HÜBNER), 1876, ii., 309.  
 thio- (V. HOFMANN), 1878, A., 396; (LEO), 1878, A., 409; (BERNTHSEN), 1878, A., 790.  
 action of methylic iodide on (WALLACH), 1879, A., 312.  
*di*- and *tri*-thio- (SCHMIDT), 1878, A., 974.  
*o*-Acetanilide and *mono*- and *di*-nitr- (MÜHLHÄUSER), 1880, A., 641; 1882, A., 302.  
**Acetantramine** (LIEBERMANN and HOERMANN), 1882, A., 860.

**Acetenylbenzene**. See Phenylacetylene.  
**Acet-*m*-ethoxysalicylaldehyde**. See 2-Acetoxy-5-ethoxybenzaldehyde.  
**Acetethylamide** (*ethylacetamide*) (NORTON and TCHERNIAC), 1878, A., 972.  
 action of phosphorus *pentachloride* on (WALLACH and HOFFMANN), 1877, ii., 187; (WALLACH and KAMENSKI), 1880, A., 547.  
*di*- and *tri*-chlor-, and the action of phosphorus *pentachloride* on (WALLACH and KAMENSKI), 1880, A., 547.  
**Acetethyl-brom-** and **-chlor-amide** (NORTON and TCHERNIAC), 1878, A., 972.  
**Acet-*o* homo-*p*-oxybenzaldehyde**. See *p*-Acetoxy-*m*-tolualdehyde.  
**Acetic acid** in crude fermentation butyric acid (GRILLONE), 1873, 375.  
 increase of, in alcoholic fermentation under reduced pressure (BROWN), 1873, 932.  
 normally present in milk as products of the functions of microzymes (BÉCHAMP), 1873, 763.  
 in urine (THUDICHUM), 1877, ii., 504.  
 formation of, by yeast alone, in presence and absence of oxygen (BÉCHAMP), 1879, A., 663.  
 preparation of (BUCHNER), 1873, 613, 957.  
 pure, manufacture of, from pyroligneous acid (DOLLFUS), 1876, i., 989.  
 conversion of *α*-*dichloropropionic acid* into (BECKURTS and OITO), 1877, ii., 181.  
 constitution of the vapour of (HORSTMANN), 1878, A., 852.  
 electrolysis of (RENARD), 1880, A., 27.  
 anhydrous, heat of combination of, with water vapour (BERTHELOT), 1877, ii., 825.  
 thermal and volumetric researches on (PETTERSSON), 1882, A., 3.  
 vapour density of (TROOST), 1878, A., 365, 832.  
 anhydrous and hydrated, vapour-density of (PETTERSSON and EKSTRAND), 1880, A., 868.  
 freezing points of mixtures of water and (GRIMAU), 1873, 613.  
 action of *o*-amidophenol on (LADENBURG), 1877, i., 302.  
 action of bromine on (HELL and MÜHLHÄUSER), 1879, A., 705.  
 glacial, action of chloral on (MEYER and DULK), 1873, 878.  
 action of chromyl *dichloride* on (ETARD), 1881, A., 583.



**Acetic acid**, action of, on codeine and morphine (WRIGHT), 1874, 1031.  
 action of, on lead and tin (MERRICK), 1874, 1065, 1188.  
 action of potassium *dichromate* on (DANESI), 1880, A., 160.  
 action of titanium *tetrachloride*, stannic chloride, and antimony *pentachloride* on (BERTRAND), 1880, A., 460.  
 influence of, on the separation of iron as basic acetate from manganese, zinc, cobalt, and nickel (JEWETT), 1880, A., 289.  
 decomposition of, by zinc-dust (JAHN), 1881, A., 141.  
 mutual displacement of formic acid and (LESCŒUR), 1875, 1175.  
 distillation of (HIRSCH), 1874, 1026.  
 oxidation of, and reduction of nitric acid with production of alcohol by the influence of certain microzymes (BÉCHAMP), 1876, ii., 540.  
 oxidation of, in the cold in neutral or slightly alkaline liquids containing nitrates and phosphates of potassium and sodium (MÉNAY), 1876, i., 367.  
 transformation of, into glycollic acid (CAZENEUVE), 1880, A., 32.  
 occurrence of furfuraldehyde in glacial (MEYER), 1879, A., 137.  
 solution of sulphur in (LIEBERMANN), 1877, ii., 276.  
 combinations of, with ammonia (TROOST), 1882, A., 1162.  
 condensation products of phenols and (RASIŃSKI), 1882, A., 1288.  
 compound of, with hydrobromic acid, and with hydrochloric acid, and with bromine and hydrochloric acid (HELL and MÜHLHAUSER), 1879, A., 705.  
 compound of, with bromine and hydrobromic acid (STEINER), 1874, 566.  
 compound of, with quinic acid (GÜNDELACH), 1876, ii., 415, 637.  
 derivatives, heat of formation of (LUGININ), 1878, A., 768; 1879, A., 872.  
*di*bromide (HELL and MÜHLHAUSER), 1878, A., 289.  
 salts of, density and molecular volume of certain (SCHRÖDER), 1881, A., 969.  
 action of, on lead salts (FIELD), 1873, 575.  
 dissociation of (DIBBITS), 1873, 33.  
 acid salts of (LESCŒUR), 1877, ii., 428; (VILLIERS), 1878, A., 25, 289.

**Acetic acid**, ethereal salts of, preparation of (FRANCHIMONT), 1880, A., 104.  
 metallic salts of, decomposition of, in presence of water (RIBAN), 1882, A., 388.  
**Acetic acid**, aluminium salts of, reactions of (REINITZER), 1882, A., 825.  
 aluminium salt solution (*liquor aluminii acetic*) (POLECK; VULPIUS), 1882, A., 943.  
 ammonium salts of (BERTHELOT), 1875, 749; 1876, i., 63.  
 behaviour of some sparingly soluble lead salts to, with some theoretical views respecting double salts (FLEISCHER), 1876, i., 190.  
 barium salt of, compound of, with barium *isobutyrate* and with barium propionate, crystallography of (FITZ), 1880, A., 799.  
 calcium salt of, products of the dry distillation of (ENGLER and LEIST), 1873, 901.  
 chromium salt of, preparation of (MOISSAN), 1881, A., 685.  
 reactions of (REINITZER), 1882, A., 825.  
 copper salt of, frequent occurrence of, in vinegar (RICHE), 1877, ii., 927.  
 decomposition of, in presence of water (CAZENEUVE), 1881, A., 153.  
 erbium salt of (CLEVE and HÖGLUND), 1873, 139.  
 iron salts of, reactions of (REINITZER), 1882, A., 825.  
 lead salt of, manufacture of (PFUND), 1876, i., 798.  
 recovery of aldehyde in the manufacture of (DOLLFUS), 1876, ii., 228.  
 action of, on iodine in potassic iodide (JOHNSON), 1878, T., 189.  
 products of the dry distillation of, with lead thiocyanate (PFANKUCH), 1873, 364.  
 compound of, with lead formate (PLÖCHL), 1881, A., 86.  
 compounds of, with hydroxycarbamide and hydroxamates (HODGES), 1877, i., 69.  
 quick method of analysing (FRESSENIUS), 1874, 921.  
 estimation of acetic acid in (SEWARD), 1874, 712.  
 magnesium salt of, basic (KUBEL), 1882, A., 825.  
 magnesium salts of, crystalline, preparation and fermentation of (PATROUILLARD), 1877, ii., 588.

**Acetic acid**, potassium salt of, heat developed during the formation of (LUGININ), 1873, 1100.

action of potassium *dichromate* on (DANESI), 1880, A., 160.

sodium salt of, anhydrous (BERTHELOT), 1874, 1082.

manufacture of, from pyroligneous acid (DOLLFUS), 1876, i., 989.

solubility of lead sulphate in solution of (DIBBITS), 1874, 662.

action of carbonic acid on (SETSCHENOFF), 1875, 879.

crystallised, use of, for warmers for railway and other carriages (ANCELIN), 1882, A., 114.

compound of, with sodium formate, crystallography of (FITZ), 1880, A., 799.

precipitation of iron and alumina by (JUNGCK), 1877, i., 344.

yttrium salt of (CLEVE and HÖGLUND), 1873, 138.

zinc salt of (FRANCHIMONT), 1879, A., 452.

**Acetic acid**, amido-. See Glycocine.

brom-, additive product of methylic sulphide and (BROWN and LETTS), 1874, 980.

*di*brom-, and its silver salt, decomposition of (PERKIN), 1877, ii., 90.

*tri*brom- (GAL), 1874, 141; (KESSEL), 1878, A., 128; (BOURGOIN), 1881, A., 155.

chlor-, etherification of (MENSCHUTKIN), 1882, A., 818.

and its derivatives, action of ammonia and aniline on (MEYER), 1876, i., 372.

action of eugenol, thymol and orcinol on (SAARBACH), 1880, A., 393.

action of hydrogen phosphide on (STEINER), 1876, i., 373.

action of some metallic bases on (SCHREIBER), 1876, ii., 398.

action of, on the thiocyanates of the aromatic monamines (JÄGER), 1877, ii., 873.

action of, on thiocyanic acid and its salts (NENCKI), 1877, ii., 872.

decomposition of, by water (FITTIG and THOMSON), 1880, A., 379.

silver salt of, action of heat and water on (BECKURTS and OTTO), 1881, A., 574.

*di*chlor- (ČECH and SCHWEBEL), 1877, ii., 179.

preparation of (WALLACH), 1873, 627; 1877, i., 59.

**Acetic acid**, *di*chlor-, conversion of chloral into (MEYER), 1878, A., 133.

etherification of (MENSCHUTKIN), 1882, A., 818.

maleic acid from (TANATAR), 1880, A., 35.

calcium and silver salts of (BECKURTS and OTTO), 1881, A., 574.

potassium salt of, dry distillation of (FRIEDRICH), 1881, A., 408.

*tri*chlor-, and its salts (CLERMONT), 1873, 745; 1874, 785, 1154;

(BYASSON), 1878, A., 967;

(V. GARZAROLLI-THURNLACKII),

1882, A., 295.

preparation of (TOMMASI and MELDOLA), 1874, 314; (CLERMONT),

1876, i., 697.

action of chlorine on (KRAFFT), 1876, ii., 503.

action of potassium cyanide on (BOURGOIN), 1882, A., 711.

action of sodium ethoxide on (KLIEN), 1877, i., 291.

carbon chlorobromide from (VAN'T HOFF), 1877, ii., 422.

physiological action of (TOMASZEWICZ), 1874, 814.

lead salt of (V. GARZAROLLI and THURNLACKII), 1882, A., 295.

potassium salt of, heat developed during the formation of (LUGININ), 1873, 1100.

action of potassium cyanide on (BOURGOIN), 1882, A., 711.

silver salt of, action of heat, and of heat and water on (BECKURTS and OTTO), 1881, A., 575.

sodium salt of, dry distillation of (HENRY), 1880, A., 236.

chlorobrom- (ČECH and STEINER), 1876, i., 373.

chloro*di*brom- and *di*chlorobrom-, and their salts (NEUMEISTER), 1882, A., 943.

cyan- (VAN'T HOFF), 1875, 251, 357.

thio-, derivatives of (GABRIEL), 1880, A., 33.

ethereal salts of (WALLACH and BLEIBTREU), 1879, A., 786.

thiocyan-, preparation of (CLAËSSON), 1878, A., 38.

compound of, with carbamylthioglycollic acid and polymeride of (CLAËSSON), 1881, A., 715.

**Acetic acid**, estimation:—

estimation of (JEHN), 1877, ii., 641.

estimation of, in lead acetate (SEWARD), 1874, 712.

**Acetic acid, estimation and separation:—**

estimation, volumetric, of, in presence of mineral acids (WITZ), 1875, 784.

estimation of, in urine (ANON.), 1873, 92; (WEIGERT), 1879, A., 980.

separation of, from propionic acid (LINNEMANN), 1874, 605.

See also Pyroligneous acid.

*ortho*Acetic acid (*acetylcarbin*) (GRIMAUX), 1873, 371.

**Acetic acid series, rate of substitution by bromine in** (HELL and URECH), 1880, A., 539.

double salts of the lower members of the (FITZ), 1880, A., 799; 1881, A., 797.

**Acetic anhydride** (BERTHELOT), 1875, 1006.

preparation of (KANONNIKOFF and M. SAYTZEFF), 1877, ii., 730; (KANONNIKOFF and A. SAYTZEFF), 1877, ii., 874.

formation of (GAL and ETARD), 1876, i., 899.

chemical functions of (LOIR), 1879, A., 621.

action of, on alkaloids (WRIGHT), 1874, 1032; (BECKETT and WRIGHT), 1875, 25, 312, 702; 1876, i., 170, 655; (HESSE), 1881, A., 615.

action of aluminium chloride on (ADRIANOWSKY), 1879, A., 620, 915.

action of ammonia on (LOIR), 1879, A., 621.

action of ammonium thiocyanate on (NENCKI and LEPPERT), 1873, 1224.

action of, on anthrapurpurin (PERKIN), 1873, 428.

action of bromine on (URECH), 1881, A., 248.

action of, on chloral ammonia (SCHIFF), 1877, ii., 308.

action of, on coniferin and some of its derivatives (RIEMANN and NAGAI), 1876, i., 77.

action of reducing agents on (LOIR), 1879, A., 621.

action of sulphuric acid on (FRANCHIMONT), 1881, A., 716.

action of titanium tetrachloride, stannic chloride, and antimony pentachloride on (BERTRAND), 1880, A., 460.

decomposition of, by zinc-dust (JAHN), 1881, A., 142.

**Acetic anhydride, trichlor-** (CLERMONT), 1878, A., 401.

**Acetic bromide, action of, on aldehyde** (TAWILDAROFF), 1874, 1080.

**Acetic bromide, action of bromine on** (URECH), 1881, A., 248.

action of, on methylic sulphide (CAHOURS), 1876, i., 696.

*mono-* and *di-*brom- (DEMOLE), 1878, A., 401.

brom-, action of zinc ethyl and zinc methyl on (SCHIDANOFF; ANITOFF), 1873, 48; (BUTLEROFF), 1877, ii., 588; (WINOGRADOFF), 1878, A., 483.

*trichlor-* (GAL), 1873, 745.

**Acetic chloride** (DEMOLE), 1878, A., 21. preparation and physical properties of (THORPE), 1880, T., 186.

action of, on acetylchloral-ammonia and chloral-ammonia (SCHIFF), 1877, ii., 308.

action of aluminium chloride on (WINOGRADOFF), 1880, A., 236; 1881, A., 407.

action of, on some amides (KRETZSCHMAR and SALOMON), 1874, 790; (KRETZSCHMAR), 1875, 563; 1877, i., 614.

action of, on epihydrincaroxylic acid (HARTENSTEIN), 1873, 1217.

action of, on hydrobenzoin and *iso*-hydrobenzoin (AMMANN), 1873, 1139.

action of, on nitrates and nitrites (ARMSTRONG), 1873, 683.

action of, on santoniac acid and santonin (SESTINI), 1875, 895.

action of zinc on (TOMMASI and QUESNEVILLE), 1873, 614.

combination of chloral and (CURIE and MILLET), 1877, i., 188.

compound of titanium tetrachloride with (BERTRAND), 1880, A., 624.

*di*chlor- (ORTO and BECKURTS), 1881, A., 1030.

*trichlor-* (GAL), 1873, 745.

preparation and physical properties of (THORPE), 1880, T., 189.

action of, upon amines and aniline (TOMMASI and MELDOLA), 1874, 313.

action of, on urea (TOMMASI and MELDOLA), 1874, 404.

*mono-*, *di-*, and *tri*-chlor-, action of zinc methyl on (BOGOMOLETZ), 1881, A., 401.

**Acetic cyanide** (FILETI), 1876, i., 570.

conversion of, into the corresponding ketonic acid (CLAISEN and SHADWELL), 1878, A., 568.

*trichlor-*, and the action of hydrochloric acid on (HOFFERICHTER), 1880, A., 35.

some derivatives of (CLAISEN and ANTWEILER), 1881, A., 153.

**Acetic iodide, trichlor-** (GAL), 1873, 745.

- Acetic thiocyanate** (MIQUEL), 1876, i., 570; 1877, ii., 869.
- Aceto-**. See also Acet- and Acetyl-.
- Acetoacetic acid** (CERESOLE), 1882, A., 1052.  
occurrence of, in urine (v. JAKSCH), 1882, A., 1120.
- Acetoacetates**, polybasic, decomposition of, by alkalis (WISLICENUS), 1881, A., 409.
- Acetoacetic ether**. See Ethylic acetoacetate.
- Acetobromalammonia** (SCHIFF and TASSINARI), 1878, A., 23.
- Aceto-mono- and -di-bromamide** (v. HOFMANN), 1882, A., 951.
- Acetobromocarbazole** (CIAMICIAN and SILBER), 1882, A., 1104.
- Acetotetrabromodiphenylamide** (GNEHM), 1876, i., 83.
- Acetobutylchloralammonia** (SCHIFF and TASSINARI), 1878, A., 23.
- Acetocarbamide** (MERTENS), 1878, A., 397.  
brom-, and the action of ammonia on (MULDER), 1874, 48.  
chlor- (TOMMASI), 1873, 758, 880.  
cyan-, synthesis of (MULDER), 1878, A., 786; 1879, A., 619.
- Acetocarbamidesulphonic acid** (*carbamidacetosulphonic acid*), a derivative of thiohydantoin (ANDREASCH), 1880, A., 877; 1881, A., 257.
- Acetocarbazoline** (GRAEBE and v. ADLERSKRON), 1880, A., 660.
- Acetochloralammonia**, action of acetic chloride on (SCHIFF), 1877, ii., 308.
- Acetochloramide** (v. HOFMANN), 1882, A., 951.  
*trichlor-* (STEINER), 1882, A., 1281.
- Acetochloro- $\alpha$ -naphthalide** (SEIDLER), 1878, A., 983.
- Acetocyanamide** and its silver and sodium derivatives (MERTENS), 1878, A., 397.
- Acetodimethylcarbamide**, cyan- (MULDER), 1878, A., 787; 1879, A., 619.
- Acetodiphenylamide** (MERZ and WEITH), 1873, 74; 1874, 375.  
action of phosphorus pentachloride on (CLAUS), 1882, A., 178.
- Acetodiphenylthiamide** (BERNTSEN), 1878, A., 790.
- Aceto-m-ditolyamide** (COSACK), 1880, A., 714.
- Acetoethyl-**. See Acetethyl-.
- Acetoguanide** and its products of decomposition (NENCKI), 1876, ii., 188.
- "Acetohydrohexaglyoxal"** (SCHIFF), 1874, 572.
- Acetohydroxamic acid** (KISSEL), 1882, A., 936.
- Acetol**. See Acetylcarbinol.
- Acetomesidide** (BIEDERMANN and LEDOUX), 1875, 569.  
nitro- (LADENBERG), 1875, 63.
- Aceto-m-methoxyisalicylic acid**. See 2-Acetoxy-5-methoxybenzoic acid.
- Acetomethylanilide** (WALLACH and KAMENSKI), 1880, A., 548.  
thio- (WALLACH), 1880, A., 557.
- Acetomethylcarbamide** (v. HOFMANN), 1882, A., 822, 951.
- $\alpha$ -Acetonaphthalide** (CALM), 1882, A., 972.  
4-*mono-* and 2:4-*di-*brom- (MELDOLA), 1879, A., 165.  
chlor- (TOMMASI), 1873, 1040; 1874, 629.  
4-nitro- (LIEBERMANN and DITTLER), 1873, 1232.  
reduction of (LIEBERMANN), 1877, i., 600.  
isomeric nitro- (LIEBERMANN and DITTLER), 1874, 692.  
2:4-*dinitro-* (LIEBERMANN and HAMMERSCHLAG), 1876, ii., 80.  
thio- (BERNTSEN and TROMPETTER), 1879, A., 147.
- $\beta$ -Acetonaphthalide** (MERZ and WEITH), 1881, A., 605; (CALM), 1882, A., 972.  
1-brom- (COSINE), 1881, A., 606.  
3-nitro- (JACOBSON), 1881, A., 736; 1882, A., 204.
- Acetonaphthylene-p-diamine** (LIEBERMANN and DITTLER), 1873, 1232; (LIEBERMANN), 1877, i., 601.
- Acetone** from phorone (JACOBSEN), 1877, ii., 447.  
in urine (MARKOWNIKOFF), 1877, i., 101.  
production of (PAWLOFF), 1877, ii., 310, 732.  
formation of (SPRING), 1881, A., 711.  
formation of, from glycerol (LANGE), 1873, 627.  
physical properties of (THORPE), 1880, T., 212.  
action of ammonia on (OECHSNER DE CONINCK and PAEST), 1874, 789; (SOKOLOFF and LATSCHINOFF), 1875, 353.  
action of ammonium *mono-* and *tri-*thiocarbonate on (MULDER), 1874, 47.  
action of boron fluoride on (LANDOLPH), 1878, A., 774; 1879, A., 914.  
action of bromine on (SOKOLOWSKI), 1877, i., 453.  
action of chlorine on (BARBAGLIA), 1874, 789; (GRABOWSKI; BISCHOFF), 1876, i., 557.  
action of *mono-* and *di-*ethylamine on (EPPINGER), 1880, A., 868.



- Acetone**, action of furaldehyde on, in presence of soda (SCHMIDT), 1881, A., 573.  
 action of hydroxylamine on (MEYER and JANNY), 1882, A., 1047.  
 action of methylamine on (GÖTSCHMANN), 1879, A., 1035.  
 action of, on potassium cyanide and thiocyanate and aqueous hydrochloric acid (URECH), 1878, A., 488; 1880, A., 545.  
 oxidation of (HERCZ), 1877, ii., 425.  
 condensation of (PINNER), 1881, A., 796; 1882, A., 941.  
 condensation products of (CLAISEN), 1876, i., 895.  
 derivatives of (EMMERLING), 1873, 496; (HEINTZ), 1874, 145.  
 ammonia-derivatives of (HEINTZ), 1874, 1080; 1875, 351; (PAULY), 1877, ii., 614.  
 volatile fatty acids produced by bringing together bromine, silver oxide and (LINNEMANN), 1874, 1156.  
 cyanhydrin (*hydroxyisobutyronitrile*) (URECH), 1873, 59; (TIEMANN and FRIEDLÄNDER), 1882, A., 56.  
 base containing sulphur (HEINTZ), 1881, A., 420.  
 preparation of hexamethylbenzene from (GREENE), 1879, A., 940.  
 estimation of, in commercial alcohol (ANON.), 1881, A., 211.  
 estimation of, in methylic alcohol (KRAEMER), 1880, A., 826.
- Acetone**, brom- (EMMERLING), 1873, 496; (EMMERLING and WAGNER), 1880, A., 867.  
 action of potassium carbonate on (EMMERLING and WAGNER), 1880, A., 867.  
*di*brom- (VÖLKER), 1878, A., 781.  
*pentabrom*-(*bromoxaform*) (GRIMAU), 1874, 1080; (BENEDIKT), 1878, A., 499.  
*hexabrom*-, formation of, from bromodichromazin (WEIDEL and GRUBER), 1877, ii., 780.  
 chlor- (BISCHOFF), 1873, 159; (MULDER; HENRY), 1873, 379.  
*di*chlor- (BISCHOFF), 1873, 159; 1876, i., 557.  
*as-di*chlor- (MULDER), 1873, 379; (THEEGARTEN), 1873, 1223.  
*s-di*chlor- (HOERMANN), 1881, A., 248; (MARKOWNIKOFF), 1881, A., 1121; (HENRY), 1882, A., 1039.  
*tri*chlor-, obtained from the so-called isobutaldehyde (KRAEMER), 1874, 676.
- Acetone**, *tri*- and *tetra*-chlor- (BISCHOFF), 1876, i., 557.  
 chlorobrom- (THEEGARTEN), 1874, 245.  
*di*chloro*di*brom- (CLAUS and LINDHORST), 1880, A., 862.  
 chloro*tri*brom- (GRIMAU and ADAM), 1880, A., 457; (EMMERLING and WAGNER), 1880, A., 862.  
*di*chlorocyan- (GRIMAU and ADAM), 1880, A., 801.  
*s-di*iod- (VÖLKER), 1878, A., 780.  
*isonitroso*- (MEYER and ZÜBLIN), 1878, A., 660; (MEYER), 1882, A., 940; (TREADWELL and STEIGER), 1882, A., 941; (MEYER and JANNY), 1882, A., 1047; (CERESOLE), 1882, A., 1052.  
 thio-, formation of (SPRING), 1881, A., 711.
- Acetoneboric acid** (*boracetone*) (LANDOLPH), 1879, A., 915.
- Acetone-bromoform** and **-chloroform** (WILLGERODT), 1882, A., 492.
- Acetonic acid**. See *Hydroxyisobutyric acid*.
- Acetonine**. See *Dehydrotriacetaminine*.
- Acetonitrile** (*methyl cyanide*), preparation of (VINCENT and DELACHANAL), 1878, A., 392; (DEMARÇAY), 1880, A., 618.  
 physical constants of (GAUTIER), 1880, A., 618.  
 action of, on chloral (HÜBNER), 1873, 626.  
 action of chlorine on (BECKURTS), 1877, i., 297.  
 oxidation of (WALLACH and CLAISEN), 1876, i., 575.  
 properties of mixtures of, with ethylic and methylic alcohols (VINCENT and DELACHANAL), 1880, A., 524.  
*mono*-, *di*- and *tri*-chlor- (BISSCHOPINCK), 1873, 1128.  
 action of alkalis on (BECKURTS and OTTO), 1877, i., 297.
- Acetonylcarbamie acid**, and its salts (URECH), 1880, A., 545.
- Acetonylcarbamide** (URECH), 1873, 61; 1874, 147.
- Acetonylthiocarbamate** (URECH), 1874, 147; 1878, A., 488; 1880, A., 545.
- Acetonyluramic acid** (*dimethylhydantoic acid*), preparation and properties of (URECH), 1873, 59.
- Acetophenine** (ENGLER and HEINE), 1873, 1036.
- Acetophenone** (*phenyl methyl ketone*) (FRIEDEL and CRAFTS), 1878, A., 792; (FRIEDEL and BALSOHN), 1880 A., 469; 1881, A., 279.

- Acetophenone** (*phenyl methyl ketone*),  
 action of ammonia on, in presence of  
 phosphorus pentoxide (ENGLER and  
 HEINE), 1873, 1036.  
 action of phosphorus pentachloride  
 on (ENGLER), 1875, 889.  
 action of sodium amalgam on (EM-  
 MERLING and ENGLER), 1874, 74.  
 reduction of (v. BUCHKA), 1879, A.,  
 61.  
 derivatives of (HUNNIUS), 1878, A.,  
 147.  
 cyanhydrin (SPIEGEL), 1881, A., 277.
- Acetophenone**, *m*-amido- (HÜBNER;  
 HUNNIUS), 1878, A., 147.  
*p*-amido- (DREWSSEN), 1882, A., 847.  
*ω*-brom- (*bromacetylbenzene*; *phenacyl*  
*bromide*) (HUNNIUS), 1878, A.,  
 147; (BÖTTINGER), 1881, A., 815.  
 preparation of (STAEDEL and KLEIN-  
 SCHMIDT), 1880, A., 659.  
 action of primary aromatic amines  
 on (MÖHLAU), 1881, A., 262.  
 action of, on dimethylaniline, di-  
 methyl-*m*-toluidine and tetra-  
 methyl-*m*-phenylenediamine  
 (STAEDEL and SIEPERMANN),  
 1880, A., 639.  
*ω*-dibrom- and *ω*-bromo-*m*-nitr- (HUN-  
 NIUS), 1878, A., 147.  
*ω*-chlor- (STAEDEL), 1878, A., 419.  
 action of ammonia on (STAEDEL  
 and RÜGHEIMER), 1876, ii., 297,  
 407; 1877, i., 459.  
*ω*-dichlor- (DYCKERHOFF), 1877, ii.,  
 481.  
*m*-nitr- (HÜBNER), 1878, A., 147.  
*p*-nitr- (DREWSSEN), 1882, A., 847.  
 thio- (ENGLER), 1879, A., 61.  
 thiocyan- (DYCKERHOFF), 1877, ii.,  
 327, 481.
- ω*-**Acetophenoneanilide** (MÖHLAU), 1881,  
 A., 262.
- Acetophenone-*o*-carboxylic acid** (GAB-  
 RIEL and MICHAEL), 1878, A., 229.  
 action of acetic anhydride and sodium  
 acetate on (GABRIEL), 1881, A., 733.  
 action of bromine on (GABRIEL and  
 MICHAEL), 1878, A., 734.  
 action of sodium amalgam on (GAB-  
 RIEL and MICHAEL), 1878, A., 427.
- Acetophenone-*o*-carboxylic acid**, *ω*-tri-  
 brom- (GABRIEL and MICHAEL),  
 1878, A., 229, 426, 734.  
*ω*-trichlor- (GABRIEL and MICHAEL),  
 1878, A., 230.
- Acetophenone-*o*-*ω*-dicarboxylic acid**  
 (*benzoylacto-*o*-carbonic acid*) (GAB-  
 RIEL and MICHAEL), 1878, A., 229.  
 action of sodium amalgam on (GAB-  
 RIEL and MICHAEL), 1878, A., 426.
- Acetophenonic alcohol**. See Phenyl-  
 methylcarbinol.
- p*-**Acetophenylenedimethyldiamine**  
 (WURSTER), 1879, A., 627.
- Acetophenylhydrazide** (FISCHER), 1878,  
 A., 309.
- Acetophenylthiocarbamide** (SCHIFF),  
 1877, i., 313; (MIQUEL), 1877, ii., 870.
- Acetophenylthiocarbazine** (FISCHER and  
 BESTHORN), 1882, A., 1095.
- Acetotoluidide**, action of phosphorus  
*pentachloride* on (WALLACH), 1877,  
 i., 91.  
 chlor-, action of ammonia on (TOM-  
 MASI), 1874, 624.
- o*-**Acetotoluidide**, 5-brom- (WROBLEW-  
 SKI), 1874, 51.  
 thio-, melting point of (WALLACH),  
 1880, A., 557.
- m*-**Acetotoluidide**, dibrom- (NEVILLE and  
 WINTHER), 1880, T., 434.
- p*-**Acetotoluidide**, dimorphism of (PANE-  
 BIANCO), 1879, A., 626; 1880, A.,  
 106.  
 3-brom- and 3-chlor- (WROBLEWSKI),  
 1874, 51, 54.  
 3-brom-, oxidation of (WROBLEWSKI),  
 1878, A., 977.  
 chlor- (MEYER), 1876, i., 372.  
 trichloro-3-nitr- (FRIEDERICI), 1879,  
 A., 311.  
 thio- (BERNTSEN and TROMPETTER),  
 1879, A., 147.  
 melting point of (WALLACH), 1880,  
 A., 557.
- Acetovanillic acid** (TIEMANN and  
 NAGAI), 1876, i., 78.  
 brom- (MATSMOTO), 1878, A., 502.  
 nitr- (TIEMANN and MATSMOTO), 1876,  
 ii., 525.
- Acetoisovanillic acid**, nitr- (MAT-  
 SMOTO), 1878, A., 501.
- Acetovanillin** (TIEMANN and HAAR-  
 MANN), 1874, 896; (TIEMANN and  
 NAGAI), 1878, A., 579.  
 acetate (TIEMANN and NAGAI), 1876,  
 i., 78.
- Acetoxime** (MEYER and JANNY), 1882,  
 A., 1047.
- Acetoximic acid** (MEYER and JANNY),  
 1882, A., 1185.  
 formula of (MEYER and JANNY), 1882,  
 A., 1047.
- 2-(*m*-)**Acetoxyanthraquinone** (LIEBER-  
 MANN and HOERMANN), 1879, A.,  
 654; 1882, A., 859.
- Acetoxybenzaldehyde**, *o*- and *p*-  
 (BARBER), 1880, A., 318, 468.
- p*-**Acetoxybenzaldehydiacetic anhy-  
 dride** (TIEMANN and HERZFELD),  
 1877, ii., 893.

- Acetoxycodine (GRIMAUD), 1881, A., 1045.
- Acetoxycoumarin. See Acetylnumbelliferone.
- Acetoxydiphenylphthalide (v. PECHMANN), 1881, A., 96.
- 2-Acetoxy-5-ethoxybenzaldehyde (*aceto-m-ethoxysalicylaldehyde*) (HANTZSCH), 1881, A., 167; (TIEMANN and MÜLLER), 1882, A., 53.
- 3-Aceto-*o*-xylidide (WROBLEWSKI), 1879, A., 920.
- Aceto- $\alpha$ - and - $\beta$ -*m*-xylidide (SCHMITZ), 1879, A., 157.
- 2-Aceto-*p*-xylidide and nitr. [m.p. 192°] (SCHAUMANN), 1879, A., 52.
- 6-nitr. [m.p. 180°] (WROBLEWSKI), 1881, A., 433.
- Acetoxymethenylamidophenyl mercaptan (*acetoxyphenylthiocarbimide*) (v. HOFMANN), 1880, A., 388; (LIEBERMANN and VÖLTZKOW), 1880, A., 659.
- 2-Acetoxy-5-methoxy-benzaldehyde and -benzoic acid (*aceto-m-methoxy-salicylaldehyde* and -*salicylic acid*) (TIEMANN and MÜLLER), 1882, A., 53.
- Acetoxytolualdehydes, 2- and 6- (BARBIER), 1880, A., 468.
- p*-Acetoxym-tolualdehyde (*acet-o-homo-p-oxybenzaldehyde*) (STAATS), 1880, A., 387.
- Acetoxytriphenylglyoxaline (JAPP and ROBINSON), 1882, T., 327.
- Acetyl-. See also Acet- and Aceto-.
- Acetyl chloride and cyanide. See Acetic-.
- Acetyl picrate. See Phenylac acetate, trinitro-.
- Acetylacetone (HENRY), 1873, 379.
- Acetylachroodextrin (HERZFELD), 1880, A., 620.
- Acetylalazarin, preparation of (PERKIN), 1876, ii., 578.
- Acetylanthranol (LIEBERMANN and TOPF), 1882, A., 856.
- Acetylbarbaloin (TILDEN), 1875, 1271.
- Acetyl-*p*-benzaldehyde (TIEMANN and HERZFELD), 1877, ii., 893.
- Acetylbenzhydrol (FRIEDEL and BALSON), 1880, A., 559.
- Acetylbenzhydrol acetate (VINCENT), 1881, A., 596.
- Acetylbenzene, brom-. See Acetophenone,  $\omega$ -brom-.
- o*-Acetylbenzoic acid. See Acetophenone-*o*-carboxylic acid.
- Acetylbenzoic anhydride. See Benzoic acetic anhydride.
- Acetylbenzoylaniline. See *p*-Acetamidobenzophenone.
- Acetylbenzylthymol (MAZZARA), 1882, A., 171.
- Acetylbromhydrin, preparation of, and action of zinc-copper couple on (HANNOT), 1879, A., 1030.
- Acetylbutylchloral cyanide. See Acetyltrichloroxyvaleronitrile.
- Acetylbutylic alcohol (*diacetonicalcohol*) (HEINTZ), 1876, i., 365.
- Acetyl-*p*-isobutylphenol (STUDER), 1882, A., 176.
- $\beta$ -Acetylisobutyric acid and its salts (CONRAD), 1878, A., 137; (BISCHOFF), 1881, A., 412.
- Acetylbutyrylmorphine (BECKETT and WRIGHT), 1875, 20.
- Acetylcarbin. See *ortho*Acetic acid.
- Acetylcarbinol (*acetal, pyruvyl alcohol*) and its derivatives (EMMERLING and WAGNER), 1880, A., 867; (HENRY), 1881, A., 1121.
- anhydride of (*glyceryl oxide*) (v. ZOTTA), 1875, 246; (DA SILVA), 1881, A., 1122; (TOLLENS and LOË), 1882, A., 31.
- trichlor-, preparation and properties of (PATERNÒ and PISATI), 1873, 158.
- Acetylcarbinyl acetate and benzoate, preparation and oxidation of (BREUER and ZINCKE), 1880, A., 645.
- Acetylcarboxylic acid, trichlor-. See triChloropyruvic acid.
- Acetylcaryophyllin (HJELT), 1880, A., 670.
- Acetylchloraethyl alcoholate, action of potassium cyanide and of alcoholic potash on (BUSCH), 1878, A., 487.
- Acetylchlorhydrone, action of fuming nitric acid on (COLLEY), 1873, 612.
- Acetyltrichloroxyvaleronitrile (*acetylbutylchloral cyanide*) (PINNER and KLEIN), 1879, A., 41.
- Acetyl-cinchonidine and -cinchonine (BECKETT and WRIGHT), 1876, i., 659.
- Acetylcinnamone. See Styryl methyl ketone.
- Acetylcodeine (BECKETT and WRIGHT), 1875, 318.
- action of potash and of water on (WRIGHT), 1874, 1039.
- Acetyl-*o*-coumaric acid, decomposition of, by heat (PERKIN), 1881, T., 442.
- Acetyl-*p*-coumaric acid (TIEMANN and HERZFELD), 1877, ii., 893.
- Acetylcuminoin (WIDMAN), 1881, A., 597.
- Acetyldaphnetin, and tetrabrom- (STÜNKEL), 1879, A., 469.
- Acetyldecarbusnic acid (PATERNÒ), 1882, A., 1080.

- "Acetyldiazobenzene" (FISCHER), 1878, A., 309.
- Acetyldibenzylthymol (MAZZARA), 1882, A., 172.
- Acetyldioxindole (SUIDA), 1879, A., 937.
- Acetyldiphenyl, *p*-nitro-*p*-amido- (SCHMIDT and SCHULTZ), 1881, A., 911.
- Acetyldiphenylenecarbinol (*fluorenic acetate*) (BARRIER), 1876, ii., 78.
- Acetylemodin (LIEBERMANN), 1877, i., 610.
- Acetylene, preparation of (DE WILDE), 1874, 882; (BERTHELOT), 1877, ii., 868; (JUNGFLEISCH), 1880, A., 456.
- formation of, by the dark discharge (BERTHELOT), 1874, 974.
- spectrum of (WÜLLNER), 1882, A., 129.
- thermochemistry of (BERTHELOT), 1876, i., 515.
- heat of combustion of (THOMSEN), 1882, A., 721.
- affinity of carbon and hydrogen in (THOMSEN), 1873, 127, 838.
- explosion of (BERTHELOT), 1882, A., 453.
- liquefaction of (CAILLETET), 1878, A., 20.
- physical properties of liquid (ANSELLE), 1879, A., 1028.
- action of carbonic oxide on (GARNITSCH-GARNITZKY), 1878, A., 217.
- action of hydrogen on, in contact with platinum-black (DE WILDE), 1874, 882.
- action of sulphuric acid on (LAGERMARK and ELTEKOFF), 1877, ii., 583; 1879, A., 780; (ZEISEL), 1878, A., 653.
- action of lacteria on (HATTON), 1881, T., 257.
- derivatives of (SABANÉEFF), 1876, i., 55.
- metallic derivatives of (BLOCHMANN), 1874, 674.
- Acetylene, brom- (DEMOLE), 1878, A., 401.
- chlor- (WALLACH and BISCHOF), 1878, A., 653; 1879, A., 453; (WALLACH), 1880, A., 800.
- o*-nitro- (v. BAAYER), 1881, A., 275.
- Acetylenecarbamide (SCHIFF), 1877, ii., 885; 1878, A., 294; (BÖTTINGER), 1878, A., 295; 1879, A., 142.
- Acetylenedicarboxylic acid and its salts (v. BANDROWSKI), 1877, ii., 592; 1880, A., 160.
- dibrom- (v. BANDROWSKI), 1880, A., 160.
- Acetylenenaphthalene. See Acenaphthylene.
- Acetylenetetracarboxylic acid. See Ethanetetracarboxylic acid.
- Acetylenic dibromide. See Ethylene, dibrom-.
- tetrabromide. See Ethane, tetrabrom-.
- tetrabromide, brom- See Ethane pentabrom-.
- bromiodide. See Ethylene, bromiod-.
- chloriodide. See Ethylene, chloriod-.
- chlorobromide. See Ethylene, chlorobrom-.
- hydrocarbons. See Hydrocarbons, acetylenic.
- diiodide. See Ethylene, diiod-.
- Acetylerythrodextrin (HERZFELD), 1880, A., 620.
- Acetylenethenylamidobenzene (SALKOWSKI), 1878, A., 140.
- Acetylenoxysalicylaldehyde. See 2-Acetoxy-5-ethoxybenzaldehyde.
- Acetylenylic alcohol, chlor- (LADENBURG and DEMOLE), 1874, 37.
- Acetylugenol (TIEMANN and NAGAI), 1877, ii., 339.
- nitro- (WESELSKY and BENEDIKT), 1882, A., 1201.
- Acetylferulic acid (TIEMANN and NAGAI), 1878, A., 579.
- Acetylisoferulic acid (TIEMANN and WILL), 1881, A., 740.
- Acetylfluorescein (BARTH and WEIDEL), 1878, A., 61; (BARTH), 1879, A., 157, 644; (NENCKI and SIEBER), 1881, A., 811.
- Acetylfluoresceincarboxylic acid (SCHREDER), 1879, A., 56.
- Acetylformamide. See Pyruvic acid, amide of.
- Acetylfurfurine and its hexabromide (SCHIFF), 1878, A., 46.
- Acetylfuroin (FISCHER), 1882, A., 499.
- Acetylgallacetonein (WITTENBERG), 1882, A., 1290.
- Acetylgardenic acid (STENHOUSE and GROVES), 1879, T., 693.
- Acetylglycide (*epihydrin acetate*) (BRESLAUER), 1880, A., 29.
- Acetyl-group, estimation of, in acetylated substitution products (SESTINI), 1875, 915.
- estimation of, by means of magnesia (SCHIFF), 1880, A., 67.
- Acetylguaiacol (TIEMANN and KOPPE), 1882, A., 55.
- Acetylhomoumbelliferone (*homooacetylcoumarin*) (TIEMANN and HELKENBERG), 1879, A., 720.



- Acetyl- $\alpha$ -homovanillic acid** (TIEMANN and NAGAI), 1877, ii., 339.
- Acetylhydrindic acid** (SUIDA), 1878, A., 586; 1879, A., 937.
- Acetylhydrocœrulignone**, *dibrom-* and *dichlor-* (HAYDUCK), 1876, ii., 516.
- Acetylhydrocotoin** (v. JOBST and HESSE), 1880, A., 328.
- Acetylhydromethylketole**. See *Acetyl-2'-methyl-dihydroindole*.
- Acetylhydrosantonide** (CANNIZZARO), 1877, i., 470.
- Acetylhydroxypropylpiperidine** (LADENBURG), 1882, A., 1193.
- Acetylide** (TOMMASI and QUESNEVILLE), 1873, 614.
- Acetylidenic dibromide**. See *Ethylene, dibrom-*.
- tetrabromide*. See *Ethane, tetrabrom-*.
- Acetylindole** (v. BAEYER), 1879, A., 938.
- Acetyl-isatic acid and -isatin** (SUIDA), 1878, A., 586.
- Acetylmalic anhydride** (PERKIN), 1881, T., 562; (ANSCHÜTZ), 1882, A., 831.
- Acetylmaltodextrin** (HERZFELD), 1880, A., 620.
- Acetyl-2'-methyl-dihydroindole** (*acetylhydromethylketole*) (JACKSON), 1881, A., 735.
- Acetylmethylketole**. See *Methylindyl methyl ketone*.
- Acetyl- $\alpha$ -naphthol** (TASSINARI), 1881, A., 280.
- Acetyl-*p*-nitr-*p*-amidodiphenyl** (SCHMIDT and SCHULTZ), 1881, A., 911.
- Acetyloxamethane**. See *Ethylic acetyl-oxamate*.
- Acetyloxindole and the action of soda on** (SUIDA), 1878, A., 587; 1879, A., 937.
- $\beta$ -Acetyl-pentyllic acid** (HARDTMUTH; HUGGENBERG), 1878, A., 782.
- Acetylperthiocyanic acid** (DE CLERMONT), 1876, ii., 292.
- Acetylphenanthraquinone** (JAPP), 1879, T., 527.
- Acetylphenylanthranol** (v. BAEYER and SCHILLINGER), 1880, A., 651.
- Acetylphenyl-*p*-coumaric acid** (OGLIALORO-TODARO), 1880, A., 164.
- Acetylphenylnitrosamine**, preparation and reactions of (MÜLLER-JACOBS), 1877, ii., 885.
- Acetylphenylpropylic alcohol** (RÜGHEIMER), 1874, 894.
- Acetyl-piperidine** (SCHOTTEN), 1882, A., 983.
- $\beta$ -Acetylpropionic acid**. See *Levulinic acid*.
- Acetylpyromeconic acid** (OST), 1879, A., 709.
- Acetyl-pyrousnetic and -pyrousnic acids** (PATERNÒ), 1882, A., 1081.
- Acetylpyrroline** [m.p. 90°] (SCHIFF); 1878, A., 216.
- Acetylquercitan** (PRUNIER), 1879, A., 241.
- Acetylquercetin and dibrom-** (LIEBERMANN and HAMBURGER), 1879, A., 945.
- Acetylpoquinamine** (HESSE), 1881, A., 923.
- Acetyl-quinidine and -quinine** (BECKETT and WRIGHT), 1876, i., 657.
- Acetylresorcinol**, *tribrom-* (CLAASSEN), 1878, A., 868.
- Acetyl-rhamnetin and dibrom-** (LIEBERMANN and HOERMANN), 1879, A., 271.
- Acetylsalicylaldehyde** (BARBIER), 1880, A., 318, 468.
- Acetylsantonin acid**, estimation of acetyl in (SESTINI), 1875, 916.
- Acetyl-solanidine and -solanine** (HILGER), 1879, A., 541.
- 1-Acetyltetrahydrocinchoninic acid and its salts** (WEIDEL), 1882, A., 530.
- Acetyltriethylsilicol** (LADENBURG), 1873, 51.
- Acetyltripropylsilicol** (PAPE), 1882, A., 154.
- Acetylbelliferone** (*acetoxy-coumarin*) (TIEMANN and LEWY), 1878, A., 424; (TIEMANN and REIMER), 1879, A., 721.
- Acetylurethane**. See *Ethylic acetyl-carbamate*.
- $\beta$ -Acetyl-*as*-isovaleric acid** ( *$\alpha$ -ethyl- $\beta$ -aceto-propionic acid*) and the substance obtained during the distillation of (THORNE), 1881, T., 340.
- Acetylvannillin**. See *Acetovanillin*.
- Acetyl-*m*-4- and -*p*-2-xylenol** (JACOBSEN), 1878, A., 412.
- Acetylzanzaloin** (TILDEN), 1875, 1270.
- Achillea Ageratum***, essential oil of (DE LUCA), 1875, 773; 1877, i., 326.
- Achrematite** (MALLET), 1875, 1141.
- Achromatism**, chemical (PRAZMOWSKI), 1874, 1125.
- Achroodextrin** (v. BRÜCKE), 1873, 394; (MUSCULUS and GRUBER), 1878, A., 778; (O'SULLIVAN), 1879, T., 777.
- changes which it undergoes in the animal organism (BIMMERMAN), 1880, A., 678.
- Achrooglycogen**, a carbohydrate from the mucin of *Helix pomatia* (LANDWEHR), 1882, A., 708.

**Acid**, action of a weak, on a salt of a stronger (PFAUNDLER), 1875, 998.

"**Acid yellow**," scarlet colouring matter from (V. MILLER), 1880, A., 814.

**Acids** from the condenser of the vacuum apparatus in a beetroot sugar manufactory (BIRNBAUM and KOKEN), 1875, 674; (ANON.), 1876, i., 135. in wine (GRÄGER), 1873, 659, 957; (MAUMENÉ), 1877, i., 456.

of wood-vinegar (KRAEMER and GRODZKI), 1879, A., 43.

constitution of, and salts in solution (BERTHELOT), 1876, i., 513.

electric conductivity of, in aqueous solution (KOHLEAUSCH), 1877, ii., 104.

etherification of (MENSCHUTKIN), 1880, A., 375; 1882, A., 383, 485, 595.

etherification of, influence of isomerism on (MENSCHUTKIN), 1881, A., 39, 883, 1117.

action of, on iron (TRÈVE and DURASSIER), 1877, i., 175.

action of, on iron and steel (JOHNSON), 1873, 848.

action of, on salts (LORIN), 1879, A., 689.

compounds of albumin with (JOHNSON), 1874, 734.

produced by the introduction of chloro- and bromo-benzene into the animal system (JAFFÉ), 1879, A., 796.

in the organism, means whereby they are produced (MALY), 1878, A., 593.

elimination of, through the kidneys (BUCHHEIM), 1876, ii., 647.

antiseptic action of (SIEBER), 1880, A., 72.

standardising of (HARTLEY), 1873, 123.

test for (DONATH), 1880, A., 517.

detection and estimation of nitrous acid in (LEEDS), 1879, A., 964.

**Acids, alkyloxy-**, boiling points of ethereal salts of (SCHREINER), 1879, A., 522.

**Acids, amido-**. See Amido-acids.

**Acids, aromatic**, synthesis of (PATERNÒ), 1873, 635; (WEITH), 1873, 901; (V. RICHTER), 1875, 73; (WEITH and LANDOLT), 1875, 1194.

formation of the anhydrous acids of, by the action of phosphoric anhydride on the corresponding acids (GAL and ETARD), 1876, i., 899.

fusion of, with soda (BARTH and SCHREDER), 1879, A., 926.

**Acids, aromatic**, action of the chlorides of, on aromatic hydrocarbons (GRUCAREVIĆ and MERZ), 1873, 1233.

action of iodine on silver salts of (BIRNBAUM and REINHEIZ), 1882, A., 970.

direct introduction of carboxyl-groups into (SENHOFER and BRUNNER), 1881, A., 265; (SENHOFER and SARLAY), 1881, A., 1140.

condensation of aromatic amines and (FISCHER), 1878, A., 51; 1879, A., 53; 1880, A., 39, 40, 636, 661; 1881, A., 587; 1882, A., 392, 833.

**Acids, aromatic fatty**, synthesis of (CONRAD and HODGKINSON), 1877, i., 590; (CONRAD), 1878, A., 732.

**Acids, fatty**, from cocoa butter (KINGZETT), 1878, T., 38.

free, presence of, in vegetable fats (ANON.), 1882, A., 421.

solid, preparation of (MÜLLER-JACOBS), 1882, A., 1147.

heat of combination of, with alkalis (BERTHELOT), 1875, 530.

surface-tension of aqueous solutions of alcohols and (DUCLAUX), 1878, A., 195.

displacement of oxygen for sulphur in (DUPRÉ), 1878, A., 568.

anhydrous, action of, on anhydrous bases (BÉCHAMP), 1878, A., 108.

action of electrolytic hydrogen on (BALBIANO and ALESSI), 1882, A., 1185.

containing the *isopropyl* group, action of nitric acid on (BREDT), 1882, A., 162.

oxidation of (ERLENMEYER), 1877, ii., 582.

decomposition of the substitution-products of lower, by water (FITTIG and THOMSON), 1880, A., 379.

acids obtained from, by distillation (CAHOURS and DEMARÇAY), 1879, A., 1036; 1880, A., 540; 1882, A., 715.

hydrocarbons produced by the distillation of (CAHOURS and DEMARÇAY), 1875, 1244; 1876, i., 363.

compound of calcium chloride with (LIEBEN), 1881, A., 712.

chlorinated, simple method of preparing (DEMARÇAY), 1877, ii., 590.

haloid-substitution products of (ERLENMEYER), 1877, ii., 582.

action of heat and water on (BECKURTS and OTTO), 1881, A., 574.

action of phenols on (SAARBACH) 1880, A., 392.

- Acids, fatty**, nitrated, preparation of (LEWKOWITSCH), 1880, A., 33.  
 stability of salts of, in presence of water; and reciprocal displacement of these acids (BERTHELOT), 1875, 1155.  
 salts of the, heats of formation and solution of (BERTHELOT), 1875, 1005.  
*monobasic*, hydrates of (GRIMAU), 1873, 371; (GEUTHER), 1873, 838.  
*di*-basic, condensation products of (v. PECHMANN), 1882, A., 1074.  
*tri*- and *tetra*-basic, synthesis of (BISCHOFF), 1881, A., 155.  
*tri*- and *penta*-basic (BISCHOFF and EMMERT), 1882, A., 1191.  
*polybasic*, obtained from malonic acid by Conrad's method, synopsis of (BISCHOFF), 1882, A., 1187.  
 saponifiable, analysis of (RÉMONT), 1880, A., 684.  
 volatile, produced by bromine, silver oxide and acetone (LINNEMANN), 1874, 1156.  
 reciprocal displacement of (LESCŒUR), 1875, 555.  
 estimation of, in animal and vegetable fats (STOHMANN), 1882, A., 429.  
 estimation of undecomposed fat in mixtures of (HAUSAMANN), 1881, A., 762.  
 estimation of neutral fat in mixtures of (GRÖGER), 1882, A., 1236.  
 manipulation of (BLYTH), 1877, ii., 931.  
 separation of, from ordinary resin (BARFOED), 1876, i., 771.
- Acids, halogen.** See Halogen acids.
- Acids, hydroxy-**, boiling points of ethereal salts of (SCHREINER), 1879, A., 522.  
 of the fatty series, oxidation of (LEY and POPOFF), 1874, 1082; (MARKOWNIKOFF), 1875, 880.
- Acids, inorganic**, action of, on alloys of rhodium with lead and zinc (DEBRAY), 1880, A., 706.  
 action of, on nitrated fatty compounds (MEYER and LOCHER), 1876, i., 903.  
 action of dilute, on bleaching powder (KOPFER), 1875, 713.  
 reactions of, with oil of peppermint and their bearing on the formation of chlorophyll (FRÉBAULT), 1874, 1172.  
 existence of definite hydrates in the aqueous solutions of (THOMSEN), 1874, 1052.  
 detection of, by means of colchicine (FLÜCKIGER), 1876, ii., 324.
- Acids, inorganic**, detection of, in vinegar (STROHL), 1875, 188; 1877, i., 752.  
 detection and estimation of, in various commercial products (SPENCE and ESILMAN), 1878, T., 298.
- Acids, complex inorganic** (GIBBS), 1877, ii., 847; 1882, A., 702.  
 derived from tungstic acid, constitution of (KLEIN), 1882, A., 368.  
 ferrocyanogen compounds of the (ATTERBERG), 1876, ii., 508.
- Acids, ketonic.** See Ketonic acids.
- Acids, organic**, synthesis of, by means of carbonyl chloride (MICHLER), 1876, ii., 68; (MICHLER and GRADMANN), 1877, ii., 334.  
 synthesis of, by the electrolysis of water by means of carbon electrodes (BARTOLI and PAPASOGLI), 1882, A., 58.  
 molecular volume of silver salts of (SCHRÖDER), 1878, A., 133.  
 relation of, to anhydrides (FITTIG), 1876, i., 898.  
 solubility of, in alcohol and ether (BOURGOIN), 1878, A., 721.  
 method of brominating (HELL), 1881, A., 711.  
 action of dehydrating substances on (VANGEL), 1880, A., 459.  
 action of, on potassium and sodium tungstates (LEFORT), 1876, ii., 278.  
 action of metallic thiocyanates on the salts of (PFANKUCH), 1873, 363.  
 ethers of, theory of the formation of, by means of hydrochloric acid (HENRY), 1878, A., 286.  
 function of, in plants (MAYER), 1876, i., 414.  
 halogenised and hydroxylised (ERLENMEYER), 1882, A., 492; (ERLENMEYER and MÜLLER), 1882, A., 598.  
*monobasic*, double function of (LOIR), 1880, A., 31.  
 action of phosphorus pentachloride on the substituted amides of (WALLACH), 1875, 883; (WALLACH and HOFFMANN), 1875, 1031; 1876, i., 604.  
 amidines of (BERNTSEN), 1876, ii., 95; 1878, A., 788; 1879, A., 922.  
 thiamides of (BERNTSEN), 1877, i., 616; 1878, A., 70, 788; 1879, A., 922.  
*di*basic, action of chloranhydrides and anhydrides on (ANSCHÜTZ), 1878, A., 136.  
*polybasic*, derived from phenol and carbon dioxide (OST), 1877, ii., 485.

- Acids, organic, polybasic, synthesis of, by means of salicylic acid and carbon dioxide** (OST), 1876, ii., 521.  
**action of, on morphine and codeine** (BECKETT and WRIGHT), 1875, 689.  
**estimation of total, in tartaric liquors** (WARINGTON), 1875, 982.
- Acids, unsaturated, constitution of** (FITTIG), 1876, i., 897; 1877, i., 61, 97; ii., 429, 735; 1879, A., 456.
- Acids, polymerised unsaturated** (FITTIG), 1880, A., 120.
- Acids, vegetable, in the cells of plants** (VINES), 1878, T., 383.  
**formation of, in leaves in the autumn** (KRAUS), 1873, 1049.  
**of wine** (BRUNNER), 1877, ii., 883.
- Acids, volatile, in lemon-juice** (WARINGTON), 1875, 936.  
**of wine** (DUCLAUX), 1874, 725; 1875, 188.
- Acmite** (DOELTER), 1881, A., 26.
- Acolyctine** (WRIGHT and LUFF), 1878, T., 335.
- Aconelline** (WRIGHT and LUFF), 1878, T., 335.
- Aconic acid** (MEILLY), 1873, 875; 1874, 788.
- Aconine.** See Alkaloids.
- Aconitic acid, occurrence of, in beet-juice** (v. LIPPMANN), 1880, A., 36.  
**in the juice of the sugar-cane** (BEHR), 1877, ii., 182.  
**in the scale from sorghum-sugar pans** (PARSONS), 1882, A., 766.  
**preparation of** (HUNAEUS), 1877, i., 456.  
**action of hypochlorous acid on** (PAWOLLECK), 1876, i. 375.  
**metallic salts of** (GUINCHET), 1882, A., 717.
- Aconitine and its derivatives.** See Alkaloids.
- Aconitum ferox, alkaloids contained in** (BECKETT and WRIGHT), 1875, 1265; (WRIGHT), 1877, i., 143; (WRIGHT and LUFF), 1878, T., 151, 318.
- Aconitum japonicum, alkaloids of** (WRIGHT and LUFF), 1879, T., 387; (WRIGHT and MENKE), 1879, T., 399.
- Aconitum Napellus, alkaloids from** (BECKETT and WRIGHT), 1875, 1265; (WRIGHT), 1877, i., 143; (WRIGHT and LUFF), 1878, T., 151, 318.
- Aconitum paniculatum, alkaloid of** (CLEAVER and WILLIAMS), 1882, A., 635.
- Acorns, value of, as fodder** (CZUBATA), 1880, A., 917.
- Acorns, digestibility and nutritive value of** (WEISKE, KENNEDY and SCHULZE), 1880, A., 820.
- Acraldehyde (acrolein), preparation of** (VAN ROMBURGH), 1882, A., 375.  
**Maxwell Simpson's syntheses of, from diiodoacetone** (VÖLKER), 1878, A., 780.  
**formation of, from ethylene** (v. MEYER), 1875, 348.  
**action of ammonium thiocarbamate on** (MÜLLER), 1874, 47.  
**action of phosphorus pentachloride on** (VAN ROMBURGH), 1882, A., 376.  
**some reactions of** (TAWILDAROFF), 1880, A., 235.  
**combination of, with sodium hydrogen sulphide** (MÜLLER), 1874, 360.  
**derivatives of** (GRIMAUX and ADAM), 1881, A., 406.  
**bromide, oxidation-products of** (LINNEMANN and PENL), 1876, i., 64.  
**hydrochloride.** See Propaldehyde,  $\beta$ -chloro-.
- Acraldehyde (acrolein), dibrom-** (HENRY), 1875, 143.
- Metacraldehyde (metacrolein)** (GRIMAUX and ADAM), 1881, A., 406, 888.  
**brom-, action of sodium ethoxide on** (GRIMAUX and ADAM), 1881, A., 1029.
- Acraldehydecarbamide (acroleincarbamide)** (LEEDS; SCHIFF), 1882, A., 1195.
- Acridine and the action of oxidising agents on** (GRAEBE and CARO), 1880, A., 398.
- Acridinic acid.** See Quinoline-2':3'-dicarboxylic acid.
- Acrogens, chemical composition of the wood of** (HAWES), 1874, 1000.
- Acrolein.** See Acraldehyde.
- Acropinacone** (HENRY), 1875, 51.
- Acryl colloids** (WAGNER and TOLLENS), 1874, 681.
- Acrylic acid** (WISLIZENUS), 1873, 493.  
**conversion of dichlorallylene into** (PINNER), 1874, 456.  
**rational formulae of** (LINNEMANN), 1874, 566.  
**action of hypochlorous acid on** (MELIKOFF), 1880, A., 160.  
**action of zinc and sulphuric acid on** (LINNEMANN), 1874, 1157; 1875, 355.  
**behaviour of, when fused with alkalis** (ERLENMEYER), 1878, A., 662.



- Acrylic acid**, behaviour of, to oxidising agents, and to nascent hydrogen evolved from an acid solution (LINNEMANN), 1874, 356.  
 derivatives of (MELIKOFF), 1882, A., 38.  
 di-substitution derivatives of (HILL), 1879, A., 616; 1881, A., 1030.  
 conversion of, into hydracrylic and lactic acids (LINNEMANN), 1876, i., 63.  
 sodium salt of, behaviour of, with fused potash (LINNEMANN), 1877, ii., 735.
- Acrylic acid**,  $\alpha$ -brom- (PHILIPPI and TOLLENS), 1874, 680.  
 from  $\beta$ -dibromopropionic acid (WAGNER and TOLLENS), 1873, 1220.  
 constitution of (ERLENMEYER), 1882, A., 190, 493.  
 $\beta$ -brom- (WALLACH and REINCKE), 1878, A., 403.  
 from  $\beta$ -dibromopropionic acid (WAGNER and TOLLENS), 1874, 680.  
 $\alpha\beta$ -dibrom-, and its salts (JACKSON and HILL), 1879, A., 224; (MAUTHNER and SUIDA), 1881, A., 889; 1882, A., 162; (HILL and ANDREWS), 1882, A., 1186.  
 $\beta\beta$ -dibrom-, and its salts (FITTING and PETRI), 1879, A., 373; (HILL), 1879, A., 616; (HILL and MABERY), 1881, A., 1030, 1124.  
 tribrom-, and its salts (MAUTHNER and SUIDA), 1881, A., 890; 1882, A., 162; (HILL and MABERY), 1881, A., 1124; (MABERY and LLOYD), 1882, A., 1049.  
 $\beta\beta$ -bromiod-, and its salts (HILL), 1879, A., 616; (HILL and MABERY), 1881, A., 1124.  
 dibromiod-, and its salts (MABERY and LLOYD), 1882, A., 1048.  
 bromiod-, and its salts (MABERY and LLOYD), 1881, A., 1125.  
 $\alpha$ -chlor-, and its salts from  $\alpha$ -dichloropropionic acid (BECKURTS and OTTO), 1877, ii., 181; 1878, A., 291.  
 action of nascent hydrogen on (BECKURTS and OTTO), 1878, A., 292.  
 conversion of, into dichloropropionic acid (BECKURTS and OTTO), 1878, A., 291.  
 $\beta$ -chlor- (WERIGO and WERNER), 1874, 242; (PINNER), 1876, i., 64; (PINNER and BISCHOFF), 1876, i., 554; (WALLACH and HUNAEUS), 1877, ii., 592; (WALLACH and REINCKE), 1878, A., 404; (WALLACH), 1880, A., 800.
- Acrylic acid**,  $\alpha\beta$ -dichlor- (BENNETT and HILL), 1879, A., 616.  
 $\beta\beta$ -dichlor-, and its salts (WALLACH and HUNAEUS), 1877, ii., 591; (WALLACH), 1880, A., 799.  
 decomposition of, by alkalis (WALLACH and BISCHOFF), 1879, A., 453.  
 chlorobrom-, and its salts (HILL), 1879, A., 616; (HILL and MABERY), 1881, A., 1124; (MABERY and LLOYD), 1881, A., 1125.  
 action of hydrogen bromide on (MABERY and WEBBER), 1882, A., 1047.  
 chlorobromiod-, and its salts (MABERY and LLOYD), 1882, A., 1049.
- Acrylic acids**, substituted, from bromopropionic acid (HILL and MABERY), 1881, A., 1124.
- Acryllactic acid** (PINNER), 1874, 682.
- Actinic absorption**. See Photochemistry.
- Actinic phenomenon**, curious (PHIPSON), 1881, A., 863, 1092.
- Actinism** of the sun's rays, and of daylight, measurement of (SMITH), 1880, A., 685; 1881, A., 955.
- Actinium**, and its oxides (PHIPSON), 1881, A., 1104; 1882, A., 697.
- Actinochemistry**, researches in (DRAPER), 1873, 232; (LEEDS), 1880, A., 837.
- Actinometry**, slow, a simple process of (DOWNES), 1881, A., 485.
- Action**, chemical. See Affinity, chemical.  
 physiological. See Physiological action.
- Adamite** (*adamine*) crystals from Laurium (LASPEYRES), 1878, A., 943.  
 See also Zinc arsenate.
- Adamsonia digitata*, fruit of (SLOCUM), 1880, A., 836.
- Additive reactions**, direct, laws which regulate (MARKOWNIKOFF), 1876, i., 338.
- Adhesion**, apparent (STEFAN), 1874, 1055.
- Adipic acid** (*butanedicarboxylic acid*) (LIMPRICHT), 1873, 622; (DE LA MOTTE), 1880, A., 36; (BALLÓ), 1881, A., 438.  
 from camphor (KACHLER), 1880, A., 559.  
 $\beta$ - and  $\gamma$ -di-, tri- and tetra-brom- (LIMPRICHT), 1873, 623.  
 dichlor- (BECKURTS and OTTO), 1878, A., 290.

- Paradipic acid** (WISLICENUS), 1875, 355.
- isoAdipic acid.** See *s*-Dimethylsuccinic acid.
- Adipic acids** (WEIDEL and BRIN), 1882, A., 1305.
- Adipocere** (EBERT), 1876, ii., 110; (KRATTER), 1882, A., 760.
- p-Adipomalic acid** (WISLICENUS), 1875, 355.
- Admission fee**, raising of, from £2 to £4, 1876, i., 639.
- Adonidin** (CERVELLO), 1882, A., 1126.
- Adonis vernalis*, constituents of (LINDEBERG), 1877, i., 96; (CERVELLO), 1882, A., 1126.
- Adularia** (DOELTER), 1878, A., 391.  
from Verespatak (Koch), 1879, A., 359.  
etched figures on (BAUMHAUER), 1877, ii., 116.  
action of sodium hydroxide and carbonate on (FLIGHT), 1882, T., 159.
- Ægyrite** (*egyrine*) (DOELTER), 1881, A., 26.
- Ærinite** (v. LASAULX), 1877, i., 53; (RAMMELSBERG), 1877, ii., 412.
- Æschynite** (RAMMELSBERG), 1878, A., 944; (HIDDEN), 1881, A., 1110.  
crystallographic examination of (BRÖGGER), 1881, A., 398.
- Æsculetin and Æsculin.** See Glucosides.
- Æsculus Pavia*, L., the red horse-chestnut, examination of (BATCHELOR), 1874, 598.
- Æthulium Septicum*, paracholesterin from (REINKE and RODEWALD), 1882, A., 303.
- Æthusa Cynapium*, alkaloid in (BERNHARDT), 1880, A., 899.
- AFFINITY, CHEMICAL—**  
**Chemical actions**, mechanism of (BERTHELOT), 1878, A., 8.  
heat developed by (BERTHELOT), 1874, 862.  
new element in the determination of heat of (MAUMENÉ), 1876, i., 868.  
retardation of, by indifferent substances (LUNGE), 1877, i., 42.  
effect of light on (CHASTAING), 1877, ii., 818.  
influence of mass on (POTILIZIN), 1882, A., 457; (MORRIS), 1882, A., 1261.  
mode of intervention of water in (BECQUEREL), 1874, 218.  
velocity of (v. BOGUSKI and KAJANDER), 1877, ii., 831.  
limits and velocities of (POTILIZIN), 1880, A., 365; 1882, A., 456.

**AFFINITY, CHEMICAL—**

- Chemical actions** in capillary spaces (BECQUEREL), 1874, 1126.  
cases of reversed (BOTTOMLEY), 1875, 730; (GLADSTONE and TRIBE), 1875, 822.
- Affinity, capillary** (CHEVREUL), 1877, i., 166.
- Affinity, chemical** (KOMMRATH), 1877, i., 165; ii., 403; (OSTWALD), 1879, A., 348; 1881, A., 17, 783; 1882, A., 360; (GULDBERG and WAAGE), 1879, A., 580; (WALD), 1882, A., 5; (TRIBE), 1882, A., 6, 449.  
common constant of (THOMSEN), 1873, 1192.  
tables of (THOMSEN), 1874, 532.  
relations between dissected formulae and (WRIGHT), 1875, 228.  
and electromotive force, relations between (BECQUEREL), 1874, 218.  
of two solutions measured by the electromotive force which they generate (BECQUEREL), 1876, i., 333, 511.  
estimation of, in terms of electromotive force (WRIGHT and RENNIE), 1880, A., 686; (WRIGHT), 1881, A., 959.  
in solutions of ferric chloride (MÜLLER), 1873, 847; 1874, 231.  
of chlorine, bromine, and iodine as multiples of the same constant, differences of (RÜHLMANN), 1878, A., 634.  
of bromine for oxygen (BAUMHAUER), 1873, 1096; (THOMSEN), 1873, 1188.  
of fluorine for metals, as deduced from the law of smallest volumes (MÜLLER-ERZBACH), 1882, A., 137.  
of the silicofluorides of the metals, as deduced from the law of smallest volumes (MÜLLER-ERZBACH), 1882, A., 1024.  
relations of, of halogens, in their combination with the metals (GRAMP), 1875, 423.  
of halogens and of sodium for different organic residues (WISLICENUS), 1882, A., 934.  
mutual replacement of the halogens in their compounds (POTILIZIN), 1874, 867; 1876, i., 677; 1877, ii., 109; 1880, A., 365; 1881, A., 134, 342.  
of hydrogen for the non-metallic elements (THOMSEN), 1873, 126, 838.

## AFFINITY, CHEMICAL—

**Affinity, chemical**, of metals for oxygen and compound radicles as shown by the heat developed and the contraction produced during combination (MÜLLER-ERZBACH), 1874, 220; 1876, i., 669; 1882, A., 451.

of metallic elements for sulphur and oxygen (SCHUMANN), 1877, ii., 704.

of oxygen for chlorine, bromine and iodine (THOMSEN), 1873, 1188.

relative, of oxygen for carbonic oxide and hydrogen (v. MEYER), 1876, ii., 40; (HORSTMANN), 1878, A., 8; 1879, A., 436.

relative and reciprocal displacements of oxygen and the halogens in metallic compounds (BERTHELOT), 1878, A., 634; 1879, A., 351.

of oxygen for sulphur, selenium and tellurium, thermochemical determination of the (THOMSEN), 1873, 1190.

of sodium hydroxide and calcium chloride for water (MÜLLER-ERZBACH), 1878, A., 471.

**Attraction, elective** (MILLS), 1873, 342.

**Chemical combination**, suspension, and solution (DURHAM), 1878, A., 636.

**Chemical decompositions**, saline, researches on (JOULIN), 1873, 589.

double, in absence of water (GUSTAVSON), 1873, 588; (POTILIZIN), 1881, A., 342.

in aqueous solutions of salts, thermochemistry of (POTILIZIN), 1881, A., 6, 869.

partial (THOMSEN), 1877, ii., 725.

**Chemical dynamics** (BECQUEREL), 1874, 944; (WRIGHT and LUFF), 1878, T., 1, 504; (WRIGHT and LUFF; WRIGHT and RENNIE), 1879, T., 475; (WRIGHT and RENNIE; WRIGHT and MENKE), 1880, T., 757.

**Chemical forces**, equivalence and transformation of (FAVRE), 1875, 33.

**Chemical equilibrium** (MUIR), 1879, T., 311; 1880, T., 424.

between hydrogen and gaseous iodine (LEMOINE), 1875, 608; 1876, i., 38; 1878, A., 265.

## AFFINITY, CHEMICAL—

**Chemical phenomena**, influence of pressure on (BERTHELOT), 1878, A., 8.

**Chemical repulsion** (MILLS), 1880, A., 693; 1881, A., 873, 971; (LECHER), 1881, A., 873.

**Agalmatolite** (*pagodite*), green, from Georgia (SHEPARD), 1881, A., 382.

**Agaric**, larch (*Boletus Laricis*), resin of (MASING), 1876, i., 612.

white (*Polyporus officinalis*), examination of (FLEURY), 1876, i., 431.

*Agaricus albus*. See Fly agaric.

*Agaricus atrotramentosus*, dihydroxyquinone in (THÖRNER), 1878, A., 575; 1880, A., 47.

*Agaricus fuscicularis*, examination of (v. HARTSEN), 1874, 705.

*Agaricus foetens*, analysis of (SACC), 1873, 650.

*Agaricus integer*, pentadecic acid in (THÖRNER), 1880, A., 44.

**Agates**, alteration of (FRIEDEL), 1876, i., 526.

**Agave**, influence of the leaves and flowering branches on the nature and quantity of the sugar contained in the flower-stem of the (BALLAND), 1877, ii., 506.

**Aggregation**, soft and semi-fluid states of (VFAUNDLER), 1877, i., 433.

**Aglaite** (JULIEN), 1880, A., 225.

**Agricolite** (FRENZEL), 1874, 447.

**Agricultural Chemistry**. See Appendix.

**Air**. See Atmospheric air.

**Air-bath** of constant temperature between 100° and 200° (SPRENGEL), 1873, 458.

improved, for heating sealed tubes (HABERMANN), 1874, 1056.

gas regulator for (PAGE), 1876, i., 24; (CRESTI), 1879, A., 294.

**Air-battery** (GLADSTONE and TRIBE), 1873, 582.

**Air-pump**, water (CHRISTIANSEN), 1873, 131; (JAGN), 1873, 591.

application of, to evaporation, distillation, filtration, etc. *in vacuo* (WOLFF), 1873, 132.

mercury, improved (MENDELÉEFF), 1874, 865.

Sprengel's mercurial, amount of exhaustion obtainable by (DONKIN), 1874, 537.

simple exhausting and compressing (BULK), 1877, i., 682.

**Air-pumps**, imperviousness of the adjusting materials of, to aqueous vapour (LASPEYRES), 1878, A., 469.

**Air-thermometers**. See under Thermochemistry.

- Airthrey** springs, analysis of, at the Bridge of Allan (JOHNSTONE), 1875, 872.
- Alabaster**, calcareous, from Mexico (DAMOUR), 1876, ii., 386.
- Alacreatine** ( *$\alpha$ -guanidopropionic acid*) (BAUMANN), 1873, 1024.
- Alacreatinine** (BAUMANN), 1874, 367.
- $\alpha$ -Alanine** ( *$\alpha$ -amidopropionic acid*) (URECH), 1874, 147; (GUTKNECHT), 1880, A., 712;  
from aldehyde (LÉVÉAVIN), 1881, A., 796.  
preparation of, by potassium cyanide (HEINTZ), 1874, 149.  
combination of, with cyanamide (BAUMANN), 1873, 1024.
- $\beta$ -Alanine** ( *$\beta$ -amidopropionic acid*) (MULDER), 1877, ii., 311.  
hydrochloride (LEWKOWITSCH), 1880, A., 33.
- Alantic acid** (*inulic acid*) and its amide (KALLEN), 1876, i., 917.
- Alantol** (*inulol*) (KALLEN), 1876, i., 917.
- Albertotype** (TOWLER), 1873, 424.
- Albinism**, vegetable, chemical study of (CHURCH), 1879, T., 33; 1880, T., 1.
- Albite** (*tschermakite*), a new felspathic mineral (v. KOBELL), 1874, 663.  
moonstone variety of, from Delaware Co., Pennsylvania (LEEDS), 1874, 29.  
from Guatemala (v. LASAULX), 1875, 625.
- Moravian** (VOM RATH), 1881, A., 550.  
from Monte Cau in the Pyrenees (v. LASAULX), 1882, A., 285.  
from the Skopi in the Grisons and from Viesch in the Valais (VOM RATH), 1881, A., 551.  
in volcanic rocks (VOM RATH), 1874, 1074.
- artificial formation of (HAUTE-FEUILLE), 1877, ii., 574; 1878, A., 205.  
action of sodium hydroxide and carbonate on (FLIGHT), 1882, T., 160.  
etched figures on (BAUMHAUER), 1877, ii., 116.  
See also Felspar.
- Albumin** (BÉCHAMP), 1874, 993; (SCHÜTZENBERGER), 1875, 1039; 1879, A., 542; (HEYNSIUS), 1876, i., 718; (DANILEWSKY), 1878, A., 989.  
of commerce (KINGZETT and ZINGLER), 1877, ii., 952.  
of the refracting media of the eye (DOGIEL), 1879, A., 834.
- Albumin**, crystallised, from hemp and castor-oil seeds, composition of (RITTHAUSEN), 1882, A., 876.  
amount of, in milk (LIEBERMANN), 1876, ii., 216.  
amount of, in the milk of women and of cows (NENCKI), 1876, i., 90.  
in plants (KELLNER), 1880, A., 279; (MÜLLER-ERZBACH), 1880, A., 492.  
crystallised, from pumpkin seeds (GRÜBLER), 1881, A., 625; (RITTHAUSEN), 1882, A., 877.  
containing very small quantities of salts, properties of (HAAS), 1877, ii., 345.  
specific rotation of (HAAS), 1876, ii., 317.  
action of arsenic on the chemical change (*metabolism*) of (v. BOECK), 1877, ii., 912.  
action of baryta on (SCHÜTZENBERGER), 1879, A., 542.  
action of bromine on (KNOP), 1880, A., 562.  
action of chloral on (BYASSON), 1874, 591.  
action of cyanogen on (LOEW), 1877, ii., 907.  
action of ferric chloride on (BUCHNER), 1882, A., 1141.  
action of iodine on (GUERRI), 1873, 512.  
action of potassium permanganate on (LOSSEN), 1880, A., 413.  
the part played by gases in the coagulation of (MATHIEU and URBAIN), 1873, 1247; 1875, 372; 1876, i., 87.  
decomposition of (SCHÜTZENBERGER), 1875, 651.  
decomposition of, in the animal body (FORSTER), 1876, ii., 211.  
seat of decomposition of, in the animal organism (HOPPE-SEYLER), 1874, 487.  
influence of borax on the decomposition of, in the organism (GRUBER), 1880, A., 907; 1881, A., 453.  
influence of muscular activity on the decomposition of (SCHENCK), 1874, 994.  
decomposition of, by pancreas ferments in absence of air (JEAN-NERET), 1877, ii., 630.  
decomposition of, by fused potash (NENCKI), 1878, A., 680.  
decomposition of, in plants (SCHULZE), 1881, A., 634.  
digestion of, by pepsin and hydrochloric acid (SCHMIDT), 1877, i., 101.



- Albumin**, fermentation of (FITZ), 1879, A., 664.
- putrefaction-products of (E. and H. SALKOWSKI), 1880, A., 413.
- aromatic products of the putrefaction of (BRIEGER), 1879, A., 806.
- oxidation of, by the oxygen of the air (LOEW), 1879, A., 389.
- relation of oxygen to the splitting up of (FRAENKEL), 1876, i., 948.
- regeneration of spent, by means of pepsin (WAGNER; WITZ), 1876, ii., 229.
- regeneration of, from peptone (HOFMEISTER), 1879, A., 950.
- influence of starch on the solubility of (ROTHER), 1873, 919.
- effect of, on the solubility of tricalcic phosphate in the blood (MERCADANTE), 1876, i., 280.
- dialysed (HUIZINGA), 1876, i., 719.
- filtration of, through animal membranes (GOTTWALT), 1882, A., 538.
- influence of the dialyser on the formation of the compounds of, with acids (JOHNSON), 1874, 745.
- amount of metamorphosis of, after blood-letting (v. VOIT and BAUER), 1873, 288.
- supposed conversion of, into fat in the ripening of Roquefort cheese (SIEBER), 1880, A., 835.
- preservation of, for photographic purposes (ZAY), 1873, 423.
- alkaloids from the decomposition of (SELM), 1879, A., 734; 1880, A., 898.
- compounds (HEYNSIUS), 1876, i., 718.
- crystalline, preparation of (DRECHSEL), 1879, A., 950.
- with acids (JOHNSON), 1874, 734, 745.
- with copper (HARNACK), 1882, A., 747.
- a crystalline decomposition-product of (DANILEWSKY), 1881, A., 185.
- indole from (KÜNE), 1875, 773; (NENCKI), 1875, 1039.
- production of a substance analogous to, by the breaking up of fibrin (GAUTIER), 1874, 1175.
- volatile oil obtained by the action of baryta on (SCHÜTZENBERGER), 1879, A., 543.
- adulteration of (HERRBURGER), 1874, 723.
- complete precipitation of, from animal fluids (HOFMEISTER), 1879, A., 183.
- reactions of (DUGIEL), 1879, A., 834.
- colour-reactions of (ADAMKIEWICZ), 1875, 172.
- Albumin**, metaphosphoric acid as a test for (HINDENLANG), 1882, A., 110.
- sodium tungstate as a test for (SONNENSCHN), 1874, 296.
- xanthic acid as a test for (ZÖLLER), 1880, A., 765.
- detection of, in urine (HILGER), 1876, i., 445.
- estimation of (GIRGENSOHN), 1874, 192; (BIROT), 1875, 374; (ARMSBY), 1880, A., 829.
- estimation of, in animal fluids (HEYNSIUS), 1875, 918.
- estimation of, in blood-serum and milk (PULS), 1876, ii., 666.
- estimation of, in milk (GERBER), 1875, 1296; (BLYTH), 1879, T., 531.
- estimation of, in plants (SCHULZE and BARBIERI), 1881, A., 312.
- estimation of, in urine (BORNHARDT), 1877, ii., 368.
- estimation of, by cupric hydrate (FASSENDER), 1881, A., 205.
- estimation of ammonia in (SCHÜTZENBERGER), 1879, A., 542.
- $\beta$ -Albumin** (DANILEWSKY), 1882, A., 75.
- Albumin**, acid, relation of, to alkali albuminate (SOYKA), 1876, ii., 316.
- Albumin**, blood (WITZ), 1876, ii., 228.
- Albumin**, circulating (v. VOIT), 1873, 285.
- Albumin**, egg (BÉCHAMP), 1875, 92; (WITZ), 1876, ii., 228.
- and its compounds (HEYNSIUS), 1876, ii., 208.
- milk and blood-serum, further investigation of, by dialysis by means of sized paper (SCHMIDT), 1876, i., 87.
- Albumin**, milk- (MUSSO and MENOZZI), 1880, A., 900.
- Albumin**, organ- (v. VOIT), 1873, 285.
- Albumin**, serum-, and its compounds (HEYNSIUS), 1876, ii., 208.
- in muscle (DEMANT), 1881, A., 630.
- Albumin**, vegetable, formation of (EMMERLING), 1880, A., 341.
- nature of, in hydrocele (BÉCHAMP), 1879, A., 550.
- Albumin**. See also Proteids.
- Paralbumin**, detection of (VULPIUS), 1880, A., 829.
- Albuminates**, estimation of nitrogen in (KRETSLER), 1880, A., 350.
- Albuminoid**. See Proteid.
- Alcohol**. See Ethylic alcohol.
- Alcoholic ferment and fermentation**. See Ferment and Fermentation.
- Alcohols** in potato fusel-oil (RABUTEAU), 1879, A., 36.

**Alcohols**, conversion of acid chlorides into (DIAXONOFF), 1877, i., 58.  
 transformation of olefines into the corresponding (BUTLEROFF), 1876, ii., 396.  
 formation of, in Piria's process for the preparation of aldehydes (PAGLIANI), 1878, A., 287, 653.  
 formed in the manufacture of starch (BOUCHARDAT), 1874, 883.  
 thermic researches on the formation of (BERTHELOT), 1876, i., 674.  
 new synthesis of (WAGNER and SAYTZEFF), 1874, 348.  
 synthesis of, by means of chlorinated ethers (LIEBEN), 1876, i., 59.  
 boiling points of (GRIMSHAW and SCHORLEMMER), 1873, 1082.  
 etherification of (MENSCHUTKIN), 1878, A., 127; 1879, A., 36, 214, 215; 1881, A., 146, 1117; 1882, A., 485, 817.  
 etherification of, initial rate and limit of (MENSCHUTKIN), 1881, A., 37.  
 etherification of, influence of isomerism on the (MENSCHUTKIN), 1881, A., 36, 883.  
 surface-tension of aqueous solutions of fatty acids and (DUCLAUX), 1878, A., 195.  
 effect of, in some chemical reactions (VOGEL), 1874, 708.  
 action of baryta and lime on (DESTREME), 1880, A., 711.  
 action of bromine on (HARDY), 1875, 245.  
 action of carbon sulphide on (HLASIWETZ and KACHLER), 1873, 497.  
 action of chlorosulphonic acid on (v. ORLOWSKY), 1875, 875; (CLAËSSON), 1879, A., 775; (BEHREND), 1880, A., 310.  
 action of chloride of lime on (GOLDBERG), 1882, A., 28.  
 action of hydriodic acid on, at low temperatures (DA SILVA), 1876, i., 60.  
 action of hydrogen peroxide and of ozone on (RENARD), 1880, A., 27.  
 action of monohydrated sulphuric acid on (BERTHELOT), 1876, ii., 59.  
 action of sulphurous anhydride on (PAGLIANI), 1878, A., 654.  
 action of sulphuryl chloride on (BEHREND), 1877, i., 182; ii., 287.  
 action of, on thiocarbimides (MIQUEL), 1877, ii., 871.  
 action of thiocyanic acid on (BLANKENHORN), 1878, A., 215.  
 decomposition of, by zinc-dust (JAHN), 1880, A., 794.

**Alcohols**, oxidation of, by electrolysis (RENARD), 1880, A., 24.  
 rectification of (MAUMENÉ), 1882, A., 487.  
 aluminium derivatives of, their preparation and decomposition (GLADSTONE and TRIBE), 1881, T., 1; 1882, T., 5.  
 some compounds of antimony *penta*-chloride with (WILLIAMS), 1876, ii., 463.  
 dry metallic derivatives of, action of carbonic oxide on (GEUTHER, FRÖLICH and LOOSS), 1880, A., 622.  
 compounds of, with aromatic hydrocarbons (v. BAEYER), 1873, 884.  
 compounds of thallium with (HARTWIG), 1874, 675; 1875, 1002.  
 products from tertiary aromatic amines and (FISCHER), 1881, A., 588.  
 poisonous action of (DUJARDIN-BEAUMETZ and AUDIGÉ), 1876, i., 92; ii., 538.  
**Alcohols, fatty**, diagnosis of (GUTKNECHT), 1879, A., 673; (HELL and URECH), 1882, A., 1040.  
 heat of combustion of (LUGININ), 1880, A., 787; 1881, A., 966.  
 of the allyl series, heat of combustion of (LUGININ), 1881, A., 871.  
 heat of solution of (ALEXÉEFF), 1881, A., 9.  
 surface-tension of aqueous solutions of fatty acids and (DUCLAUX), 1878, A., 195.  
 action of, on benzothiocarbimide (MIQUEL), 1877, i., 709.  
**Alcohols, fermentation**, several groups of isomeric bodies derived from (PIERRE and PRICHOT), 1873, 258.  
**Alcohols, monohydric**, reciprocal action of oxalic acid and (CANOIRS and DEMARÇAY), 1877, i., 183.  
 sulphates of (CLAËSSON), 1880, A., 28.  
**Alcohols, polyhydric**, action of oxalic acid on (LOHIN), 1873, 1219; 1874, 140; 1875, 1171; 1876, ii., 58; 1878, A., 398.  
 reaction of some (KLEIN), 1878, A., 564.  
 production of colouring matters by the action of aromatic nitro-substitution-products on (BRUNNER), 1882, A., 784.  
 sulphates of (CLAËSSON), 1879, A., 1033; 1880, A., 28.  
**Alcohols, secondary**, general method of preparing (WAGNER), 1882, A., 376.

- Alcohols, tertiary**, formation of (PAWLOFF), 1877, i., 57.  
 containing three different radicles, synthesis of (PAWLOFF), 1877, ii., 732.
- Alcohols, primary, secondary and tertiary**, action of dehydrated oxalic acid on (CAHOURS and DEMARÇAY), 1878, A., 653.  
 determination of, by colour reaction (MEYER and LOCHER), 1875, 1170.
- Aldehyde**. See Acetaldehyde.
- Aldehydes**, retort for preparing, by the distillation of calcium salts (TER MEER), 1876, ii., 395.  
 formation of alcohols in Piria's process for the preparation of (PAGLIANI), 1878, A., 653.  
 bye-products obtained in the preparation of, by Piria's method (PAGLIANI), 1878, A., 287.  
 synthesis of the (GÖTTIG), 1877, ii., 304.  
 atomic volume and specific gravity of (HERMANN), 1878, A., 638.  
 action of ammonium cyanate on (LJUBAVIN), 1881, A., 796.  
 action of ammonium *mono-* and *tri-*thiocarbonate on (MULDER), 1874, 47.  
 action of carbon sulphide on (HLASIWETZ and KACHLER), 1873, 497.  
 action of, on chloralammonia (SCHIFF and TASSINARI), 1878, A., 23.  
 action of furfuraldehyde on, in presence of soda (SCHMIDT), 1881, A., 573.  
 action of, on naphthylamine *disulphide* (PAPASOGLI), 1874, 274.  
 and their derivatives, condensation products of (BORODIN), 1873, 58; (LIEBEN and ZEISEL), 1881, A., 710.  
 products from primary aromatic amines and (FISCHER), 1879, A., 53; 1880, A., 39; 1881, A., 589.  
 condensation of, with ethylic acetate and malonate (CLAISEN), 1881, A., 405.  
 compounds of, with aromatic hydrocarbons (v. BAeyer), 1873, 501, 884.  
 compounds of, with phenols (v. BAeyer), 1873, 501; (TER MEER), 1875, 158.  
 new combinations of, with phosphonium iodide (DE GIRARD), 1882, A., 710.  
 compounds of urethane with (BISCHOFF), 1875, 116.
- Aldehydes, chlor-**, action of potassium cyanide on (WALLACH), 1875, 351.
- Aldehydes, chlor-**, action of zinc ethyl and zinc methyl on (v. GARZAROLLI-THURNLACKH), 1882, A., 295; (WAGNER), 1882, A., 377.
- Aldehydes, thio-** (KLINGER), 1877, ii., 305; 1878, A., 132, 720.
- Aldehydes, aromatic**, formation of (REIMER), 1876, ii., 82.  
 synthesis of (ETARD), 1880, A., 467.  
 synthesis of, by means of chromyl dichloride (PATERNO and SCICHLONE), 1881, A., 423.  
 action of acetic anhydride on (BARBIER), 1880, A., 318, 468.  
 action of *isobutyric* anhydride on (PERKIN), 1879, T., 136.  
 formation of coumarin and of cinnamic and other analogous acids from the (PERKIN), 1877, i., 388.
- Aldehydes, fatty**, certain, heat of combustion of (LUGNIN), 1881, A., 966.
- Aldehyde-ammonia**, constitution of (SCHIFF), 1877, ii., 308.  
 action of nascent hydrogen and cyanic acid on (URECH), 1874, 147.  
 a series of compounds derived from (SCHIFF), 1877, i., 313.  
 condensation products from ethylic acetoacetate and (HANTZSCH), 1881, A., 1028.
- Aldehydecollidine**. See 2:5-Methyl-ethylpyridine.
- Aldehyde-green** (SPRINGMÜHL), 1874, 611; (VOGEL), 1879, A., 84.
- Aldehyde-resin** (CIAMICIAN), 1881, A., 247.
- Aldehydic acids**, introduction of aromatic hydrocarbons into (BÖTTINGER), 1881, A., 814, 1035.
- Aldehydines**, a new class of bases (LADENBURG), 1878, A., 571; 1879, A., 233.
- m*-Aldehyde-*o*-hydroxybenzoic acid**. See Aldehydosalicilic acids.
- m*-Aldehyde-*p*-hydroxybenzoic acid** (*o*-alchylido-*arydracilic acid*) (TIEMANN and REIMER), 1877, i., 84; 1878, A., 225.
- Aldehydohydroxybenzoic acids** from *m*-hydroxybenzoic acid (TIEMANN and LANDSHOFF), 1879, A., 927.  
 melting and boiling points of (TIEMANN), 1879, A., 924.  
 reduction of, to alcoholic acids (REIMER), 1878, A., 880.
- Aldehyde-2- and -4-hydroxyisophthalic acids** (REIMER), 1878, A., 881.
- o*-Aldehydeoxydracilic acid**. See *m*-Aldehyde-*p*-hydroxybenzoic acid.
- Aldehydoprotocatechuic acid**. See *iso*Noropianic acid.

- Aldehydosalicylic acids** (TIEMANN and REIMER), 1877, i., 83; 1878, A., 225.
- Aldehydovanillic acid** (TIEMANN and MENDELSON), 1877, i., 87.
- Aldol** (WURTZ), 1873, 876; 1876, ii., 65.  
preparation of (NEWBURY), 1881, A., 405; (WURTZ), 1882, A., 488.  
action of ammonia on (WURTZ), 1879, A., 704, 780.  
an oxygenated basic derivative of (WURTZ), 1881, A., 246.
- Paraldol**, a polymeric modification of aldol (WURTZ), 1876, ii., 621.
- Aldol-ammonia**, bases derived from (WURTZ), 1879, A., 704, 780.
- Ales**, Burton, composition of (LAWRENCE and REILLY), 1879, A., 344.
- Aleurites triloba**, composition of the fruit of (NALLINO), 1873, 85; (MUTSCHLER and KRAUCH), 1879, A., 957.  
oil from the kernel of (CORENWINDER), 1876, i., 97; (HECKEL), 1876, i., 98.
- Algæ**, fresh-water, iodine in (ZENGER), 1876, i., 876.  
marine, composition of (ALLARY), 1881, A., 319.
- Algarovilla**, tannin from (EITNER), 1882, A., 908.
- Alimentary canal** of dogs, action of biliary acids on the (SCHÜLEIN), 1878, A., 161.
- Alizarin** (1:2-dihydroxyanthraquinone) (v. BAAYER and CARO), 1875, 68; (CLAUS), 1875, 891; (WILLGERODT), 1876, i., 249.  
from  $\alpha$ -diamidoanthraquinone (v. PERGER), 1879, A., 724.  
preparation of (OTT), 1875, 197; (ANON.), 1882, A., 125.  
synthesis of (WIDMAN), 1876, ii., 518.  
absorption-spectrum of (ROSENSTIEHL), 1879, A., 807.  
vapour density and maximum tension of (TROOST), 1879, A., 1039.  
action of ammonia on (LIEBERMANN and TROSCHE), 1875, 890; (v. PERGER), 1877, ii., 342.  
action of bromine on (PERKIN), 1874, 401.  
action of nitrous acid on (NIENHUIS), 1876, ii., 84.  
means of protecting, from the action of iron (WAGNER; DÉPIERRE), 1876, ii., 234.  
colouring matters of (VOGEL), 1879, A., 83.
- Alizarin** (1:2-dihydroxyanthraquinone), colouring matters from, absorption spectrum of (ROSENSTIEHL), 1879, A., 807.  
application of, in dyeing and calico printing (STEIN), 1882, A., 1251.  
a method of dyeing with artificial (FORSTER), 1876, ii., 234.  
use of, in Turkey-red dyeing (RÖMER), 1876, i., 459.  
as an indicator in volumetric analysis (SCHAAL), 1874, 191.  
reaction for distinguishing, from extract-red (WAGNER), 1876, ii., 328.  
detection and estimation of (SCHUNCK and ROEMER), 1880, A., 424.  
detection of small quantities of, in mixtures of alizarin and purpurin (SCHUNCK and ROEMER), 1877, i., 665.
- Alizarin**,  $\alpha$ -amido-, and its preparation and dyeing properties (PERKIN), 1876, ii., 580.  
 $\beta$ -amido- (SCHUNCK and ROEMER), 1879, A., 654.  
mono- and di-brom- (DIEHL), 1878, A., 428.  
brom-, action of nitric acid on (PERKIN), 1874, 403.  
tetrabrom- (MERZ and WEITH), 1878, A., 75; (DIEHL), 1878, A., 428.  
mono-, di- and tetra-chlor- (DIEHL), 1878, A., 428.  
nitr-, application of, to steam dyeing (STAMM), 1877, ii., 950.  
 $\alpha$ -nitr-, preparation and dyeing properties of (PERKIN), 1876, ii., 578.  
 $\beta$ -nitr- (*alizarin-orange*) (ROSENSTIEHL), 1876, ii., 519; 1878, A., 231; 1879, A., 725; (VOGEL), 1879, A., 84.  
preparation of (SIMON), 1882, A., 863.  
absorption-spectrum of (ROSENSTIEHL), 1879, A., 807.  
amido-compounds from (ROSENSTIEHL), 1878, A., 232.  
 $\alpha$ - and  $\beta$ -nitr- and their derivatives (SCHUNCK and ROEMER), 1879, A., 654.  
nitroso- (GIRARD and PAEST), 1879, A., 383.
- $\alpha$ -Alizarinamide** (1-amido-2-hydroxyanthraquinone) (LIEBERMANN), 1877, i., 612.
- $\beta$ -Alizarinamide** (2-amido-1-hydroxyanthraquinone) (v. PERGER), 1879, A., 253.
- Alizarin-blue** (SPRINGMÜHL), 1873, 308, 422; (ATERBACH), 1879, T., 799; (VOGEL), 1879, A., 83; (GRAEBE), 1879, A., 259; (ANON.), 1879, A., 419.



- Alizarin-blue**, synthesis of (GRAEBE), 1879, A., 259.  
 constitution of (GRAEBE), 1880, A., 262.  
 action of bromine, of chlorine, of caustic potash, and of sulphuric acid on (AUERBACH), 1879, T., 803.  
 base from (GRAEBE), 1879, A., 259.
- Alizarincarboxylic acid** (HAMMER-SCHLAG), 1878, A., 323.
- Alizarindiamide**. See Anthraquinone, 1:2-diamido-.
- Alizarinimide** (LIEBERMANN), 1877, i., 613.
- Alizarin-orange**. See Alizarin,  $\beta$ -nitro-.
- Alizarinpurpurosulphonic acid** (V. PERGER), 1879, A., 256.
- Alizarinsulphonic acid** (V. PERGER), 1879, A., 256; (GRAEBE), 1879, A., 655.
- Alkali**, manufacture of. See under Sodium.
- aluminates, preparation of (G. and F. LÖWIG), 1879, A., 491.
- carbonates, action of solutions of, on earthy oxalates (SMITH), 1877, ii., 245.
- hydrogen carbonates, estimation of (LUNGE), 1882, A., 895.
- chlorates, reduction of, to chlorides by the action of zinc and copper in presence of water (THORPE), 1873, 547.
- chlorides, formation of, from their sulphates by ignition with ammonium chloride (PHILLIPS), 1875, 103.
- electric conductivity of, in aqueous solution (KÖHLRAUSCH and GROTRIAN), 1875, 605, 1149; 1876, i., 182.
- chromates, action of hydracids on (VARENNE), 1882, A., 280.
- geometrical relations which exist between many (WYRUBOFF), 1882, A., 147.
- hydrates and hydroxides, heat of formation of (BERTHELOT), 1873, 1096.
- polysulphides, heats of formation and of solution of the (SABATIER), 1881, A., 492.
- organic salts, estimation of (SCHWARZ and PASTROVICH), 1881, A., 124.
- salts, solubility of mixtures of alkaline earth salts and (PRECHT and WITTJEN), 1881, A., 978; 1882, A., 1264.
- effect of, on the growth of beetroot and potato (PAGNOUL), 1875, 908.
- Alkali** solutions, method for the desulphurisation of (SCHEURER-KESTNER), 1881, A., 766.
- sulphates, geometrical relations which exist between (WYRUBOFF), 1882, A., 147.
- conversion of, into the carbonates, tartrates, etc., in the moist way (SMITH), 1873, 1003.
- in solution, action of hydrochloric acid on (THOMAS), 1878, T., 372.
- estimation of (JEAN), 1877, i., 738.
- estimation of a mixture of alkaline earth sulphates and (JEAN and PELLET), 1877, ii., 353.
- sulphides, action of sulphur on, in dilute solutions (FILHOL), 1882, A., 141.
- use of, in leather-dressing (GÉLIS), 1877, ii., 243.
- thiocyanates, action of, on the hydrochlorides of the alkaloids of the fatty series (DE CLERMONT), 1877, ii., 309.
- Alkalis**, solubility of, in ether (SKEV), 1876, ii., 602; 1877, ii., 706.
- action of, on cotton and flax (JEAN-MAIRE), 1874, 931.
- action of, on water; lecture experiment (V. HOFMANN), 1874, 765.
- chemical technology of (ANON.), 1881, A., 854.
- use of, in the manufacture of Portland cement and the crumbling or disintegration of the latter (ERDMENGER), 1876, i., 967.
- equivalence of, in beetroot (CHAMPION and PELLET), 1875, 907.
- caustic, use of Nessler's test for ammonia for the detection of, in presence of carbonate (SALZER), 1881, A., 940.
- estimation of, by potassium xanthate (GRETE), 1876, ii., 551; 1877, ii., 929; 1878, A., 341.
- test for, with tannic acid (GRIESS-MAYER), 1873, 95.
- estimation of, in the ash of plants (HORNBERGER), 1878, A., 245.
- estimation of the, in silicates and in substances not attacked by acids by means of barium hydroxide (TERREIL), 1876, i., 746.
- estimation of, in animal and vegetable substances (V. ADLERSKRON), 1875, 186.
- estimation of, in the salts of ureides (MENSCHUTKIN), 1874, 890.

**Alkalis**, separation of, from the alkaline earths (PFEIFFER), 1879, A., 341.  
 separation of, from magnesium (CLASSEN), 1879, A., 969.  
 separation of, from vanadic acid (GERLAND), 1877, ii., 922.

**Alkali-albuminate** (MÖRNER), 1879, A., 489.  
 relation of acid albumin to (SOYKA), 1876, ii., 316.  
 relation of, to alkaline phosphates and to casein in milk (SOXHLET), 1873, 187.

**"Alkali-blue"** (ANON.), 1879, A., 418.

**"Alkali-green"** (MELDOLA), 1882, T., 189; A., 503.

**Alkaline earths**, characteristics of the (BRÜGELMANN), 1880, A., 701.  
 behaviour of cellulose with the (WEISKE), 1876, ii., 662.  
 separation of, from the alkalis (PFEIFFER), 1879, A., 341.  
 aluminates, preparation of (G. and F. LÖWIG), 1879, A., 491.  
 carbonates and oxides, action of iodine on (CROSS and SUGIRA), 1878, T., 409.  
 chlorides, electric conductivity of, in aqueous solution (KÖHLRAUSCH and GROTRIAN), 1875, 605, 1149; 1876, i., 182.  
 oxides, action of sulphurous anhydride on (BIRNBAUM and WITTICH), 1880, A., 606.  
 organic salts, estimation of (SCHWARZ and PASTROVICH), 1881, A., 124.  
 sulphates, isomorphism of the anhydrous (ARZRUINI), 1873, 247.  
 estimation of a mixture of alkali sulphates and (JEAN and PELLET), 1877, ii., 353.

**Alkaloidal substances** found in the animal organism during life (SPICA), 1881, A., 294.

**Alkaloids** (PETIT), 1879, A., 658; (TANRET), 1881, A., 832; 1882, A., 876.  
 extraction of poisonous (SELM), 1877, i., 93, 110.  
 extraction of, by means of oxalic acid (ALESSANDRI), 1882, A., 1003.  
 use of coal oils in the preparation of (BOIRAUX and LÉGER), 1875, 1264.  
 identification of (CZUMPELITZ), 1882, A., 340.  
 spectra of (HOCK), 1882, A., 349.  
 temperatures at which some, sublime as determined by an improved method (BLUTH), 1878, T., 313.  
 comparative solubilities of, in the crystalline, amorphous, and nascent states (PRESCOTT), 1876, i., 403.

**Alkaloids**, relation between the bases of the oxalic series and some of the (WALLACH), 1880, A., 548.  
 action of, on the organic substratum of the animal body (ROSSEACU), 1874, 173.  
 influence of, on certain properties of hæmoglobin (SCHÄR), 1875, 175.  
 influence of, on digestion (WOLBERG), 1881, A., 752, 834.  
 influence of nitrogenous manures on the yield of, in certain plants (v. JOBST), 1877, ii., 213.  
 natural, action of organic acids and their anhydrides on (WRIGHT), 1874, 1031; (BECKETT and WRIGHT), 1875, 51, 312, 689; 1876, i., 170, 652.  
 action of hydrogen sulphide on (SCHMIDT), 1876, ii., 94.  
 removal of nitrogen from (BOEKE), 1873, 1041.  
 oxidation products of (HLASIWETZ and WEIDEL), 1873, 1041.  
 compounds of, with iodine (BAUER), 1875, 466; (HILGER), 1876, i., 404.  
 hydrochlorides of, action of alkali thiocyanates on (DE CLERMONT), 1877, ii., 309.  
 hydrocyanides of (FLÜCKIGER), 1873, 497.  
 nitroprussides of (DAVY), 1881, A., 401.  
 artificial (LADENBURG), 1880, A., 410.  
 cadaveric. See Ptomaines.  
 mydriatic or pupil-dilating (LADENBURG), 1881, A., 446.

from *Aconitum ferox* (BECKETT and WRIGHT), 1875, 1265; (WRIGHT), 1877, i., 143; (WRIGHT and LUFF), 1878, T., 151, 318.

from *Aconitum japonicum* (WRIGHT and LUFF), 1879, T., 387; (WRIGHT and MENKE), 1879, T., 399.

from *Aconitum Napellus* (BECKETT and WRIGHT), 1875, 1265; (WRIGHT), 1877, i., 143; (WRIGHT and LUFF), 1878, T., 151, 318.

from *Aconitum paniculatum* (CLEAVER and WILLIAMS), 1882, A., 635.

from *Aethusa Cynapium* (BERNHARDT), 1880, A., 899.

from *Agericus albus* (fly agaric) (HARNACK), 1877, ii., 197.

from the decomposition of albumin (SELM), 1879, A., 734; 1880, A., 898.

from *Alstonia constricta* (v. MUELLER and RUMMEL), 1879, T., 31; (HESSE), 1879, A., 269, 332; 1881, A., 623; (OBERLIN and SCHLAGDENHAUFFEN), 1880, A., 127.

- Alkaloids** from bark of *Alstonia spectabilis* (HESSE), 1881, A., 447.  
 from *Aspidosperma Quebracho* (HESSE), 1881, A., 294; 1882, A., 742.  
 from *Baccharis cordifolia* (mio-mio) (ARATA), 1879, A., 1045.  
 from Belladonna (LADENBURG), 1880, A., 561; (SCHMIDT), 1881, A., 293; (BUDEL), 1882, A., 1126.  
 from Belladonna, Datura and Conium (BRETET), 1880, A., 425.  
 from *Berberis Aquifolium* ("Oregon grape root") (PARSONS), 1882, A., 1140.  
 from Bolbo (BOURGOIN and VERNE), 1873, 179.  
 from the brain, liver, and wild poppy (SELM), 1876, i., 938.  
 from *Buxus sempervirens* (PAVESI and ROTONDI), 1875, 178; (ALESSANDRI), 1882, A., 744.  
 from *Chelidonium majus* (celandine) (MASING), 1877, i., 477.  
 from Cinchona bark (CARLES), 1873, 525, 931; (HESSE), 1873, 914; 1878, A., 155, 434; 1879, A., 71; 1880, A., 328; 1882, A., 1113; (DE VRIJ), 1874, 88, 588; 1876, i., 423; 1880, A., 898; (HOWARD), 1877, ii., 636; 1880, A., 177; (CLAUS), 1879, A., 168; 1881, A., 183; (HOWARD and HODGKIN), 1882, T., 66; (ARNAUD), 1882, A., 229; (PLANCHON), 1882, A., 634.  
 constitution of (HESSE), 1881, A., 615.  
 optical properties of some modifications of the (HOWARD), 1873, 1177.  
 action of acetic anhydride on (BECKETT and WRIGHT), 1876, i., 656; (HESSE), 1881, A., 615.  
 action of acetic anhydride on the hydrochloro-bases of (HESSE), 1881, A., 619.  
 action of hydrochloric acid on (HESSE), 1881, A., 615.  
 action of nascent hydrogen on, in acid solutions (HOWARD), 1873, 1177.  
 action of potassium permanganate on (HOOGWERFF and VAN DORP), 1880, A., 895.  
 action of potassium thiocyanate on (HESSE), 1879, A., 281.  
 phenol compounds of the (HESSE), 1876, ii., 313, 639.  
 effect of manures on the yield of (BROUGHTON), 1873, 523.
- Alkaloids** from Cinchona bark, detection of (SCHRAGE), 1876, i., 777; (GODEFFROY), 1878, A., 344.  
 estimation of (MEDIN), 1873, 653; (DE VRIJ), 1874, 88, 588; 1882, A., 665; (CLEAVER), 1876, i., 443; (HESSE), 1878, A., 801; (PRUNIER), 1879, A., 489; (ANON.), 1880, A., 190; (THRESH), 1880, A., 763; (PROLLIUS), 1882, A., 246; (KISSEL), 1882, A., 899; (BIEL), 1882, A., 1139.  
 estimation of, from the Bolivian Cinchona barks exhibited at the Horticultural exhibition in Amsterdam (STOEDER), 1879, A., 281.  
 separation of, from Cinchona barks (DE VRIJ), 1874, 95.  
 from Javanese *Cinchona Calistaya* bark (DE VRIJ), 1875, 184; (HESSE), 1875, 282, 909.  
 from *Cinchona cuprea* (PAUL and COWNLEY), 1882, A., 316; (WHIFFEN), 1882, A., 316; (HESSE), 1882, A., 317.  
 from *Cinchona officinalis* (v. JOEST), 1874, 89.  
 from *Cinchona officinalis*, *C. succirubra* and *C. Pahudiana* (DE VRIJ), 1874, 89, 1002; (VAN GORKOM), 1874, 184; (PAUL), 1876, i., 423.  
 from *Cinchona succirubra* leaves (HOWARD), 1873, 524.  
 from cinchonine (BUTLEROFF and WISCHNEGRADSKY), 1878, A., 988.  
 found in damaged Turkey corn and in mildewed maize bread (BRUGNATELLI and ZENONI), 1877, i., 323.  
 poisonous and crystallisable, from an exhumed corpse containing arsenic (SELM), 1879, A., 734.  
 from *Coptis trifolia* (GROSS), 1874, 912.  
 from *Datura Stramonium* (BRETET), 1880, A., 425; (LADENBURG), 1880, A., 561; (SCHMIDT), 1881, A., 293.  
 chemico-legal examination of (WASILEWSKY), 1877, ii., 934.  
 from dita bark (*Alstonia scholaris*; *Echites scholaris*) (v. JOEST and HESSE), 1876, i., 276; (HARNACK), 1879, A., 332; (HESSE), 1881, A., 448.  
 from putrefied eggs (SELM), 1879, A., 734.  
 from ergot (BLUMBERG), 1879, A., 269, 387.

**Alkaloids from *Gelsemium sempervirens*** (HOLMES), 1876, i., 941; (SONNENSCHNEIN), 1877, i., 97; (ROBBINS), 1877, ii., 344; (WORMLEY), 1882, A., 1109.  
 from *Hydrastis canadensis* (*golden seal*) (VAN DER ESPT), 1873, 919; (BERT), 1876, i., 937.  
 from *Isopyrum thalictroides* (V. HARTSEN), 1873, 511.  
 from *jaborandi* (HOLMES), 1875, 1269; (KINGZETT), 1876, ii., 367; 1877, ii., 907; (HARNACK and MEYER), 1880, A., 898.  
 from *jusquiame* (LADENBURG), 1880, A., 561.  
 from lotur bark (HESSE), 1879, A., 73.  
 from lupines (SCHULZ and WILDT), 1880, A., 57; (SCHULZ), 1880, A., 416; (BAUMERT), 1881, A., 831; 1882, A., 229, 873.  
 from milk (BLYTH), 1879, T., 531.  
 from morphine (NADLER), 1874, 589.  
 from *Nux vomica* (SHENSTONE), 1881, T., 453.  
 from opium (HESSE), 1874, 484.  
   action of ferric chloride and sulphuric acid on (LINDO), 1878, A., 678; (HOW), 1878, A., 811.  
 from the *Papaveraceae* (ELJKMAN), 1882, A., 1112.  
 from peptones (TANRET), 1881, A., 832; 1882, A., 876.  
 from pereiro bark (HESSE), 1878, A., 433; 1880, A., 675.  
 from the pomegranate (TANRET), 1878, A., 739; 1879, A., 170, 657; 1880, A., 481.  
 from poppies (SELM), 1876, i., 938; (HESSE), 1878, A., 157.  
 from proteid animal matter (GAUTIER), 1882, A., 873.  
 from *Quebracho Colorado* (*Loxopterygium Lorentzii*) (HESSE), 1882, A., 744.  
 from "quinetum of Darjeeling" (OTDEMANS), 1879, A., 1044; 1881, A., 1154.  
 from quinine wine, estimation of (SCHACHT), 1881, A., 204.  
 from tyrosine (KÖRNER and MENOZZI), 1882, A., 730.  
 from *Veratrum album* (MITCHELL), 1875, 1267 (WRIGHT and LUFF), 1879, T., 405.  
 from *Veratrum Lobelianum* (TOBIEN), 1878, A., 589.  
 from *Veratrum Sabadilla* (MITCHELL), 1875, 1267; (WRIGHT and LUFF), 1878, T., 338; (HESSE), 1878, A., 802.

**Alkaloids from *Veratrum viride*** (MITCHELL), 1875, 1267; (WRIGHT), 1879, T., 421; (BULLOCK), 1880, A., 170.  
 from the yew (MARME), 1877, i., 476; (AMATO and CAPPARELLI), 1880, A., 899.  
**Alkaloids, detection of** (V. STRUVE), 1874, 293; (SELM), 1874, 608; 1876, i., 113; 1877, i., 110; (GODEFFROY), 1877, i., 348; ii., 365; (THRESH), 1880, A., 763; (TATTERSALL), 1880, A., 763.  
 ammonium molybdate as a test for (BUCKINGHAM), 1874, 715.  
 ammonium thiomolybdate as a test for (NAGELVOORT), 1877, ii., 230.  
 perchloric acid as a test for (FRAUDE), 1880, A., 69.  
 reactions of, with chloroform (NOWAK), 1873, 412, 535.  
 characteristic colour reactions of, with antimony trichloride (SMITH), 1879, A., 831.  
 phosphomolybdic acid as a test for (V. STRUVE), 1874, 293.  
 phosphoric acid as a test for (NOWAK and KRATSCHEMER), 1874, 1018.  
 potassium bismuth iodide as a test for (VON), 1874, 1105; (MAUGINI), 1882, A., 900.  
 detection of, in alcohol (SELM), 1873, 1167.  
 detection of, in corpses (SCHWANERT), 1875, 293; (RENNARD), 1877, ii., 230.  
 detection of, in the internal organs of the body (RÖRSCH and FASSBENDER), 1875, 192.  
 detection of, in cases of poisoning (LIEBERMANN), 1876, i., 966.  
 estimation of (THRESH), 1880, A., 763.  
 estimation of, by potassio-mercuric iodide (PRESCOTT), 1882, A., 664.  
 separation of, from ptomaines (BROUARDEL and BOUTMY), 1881, A., 749; (SPICA), 1882, A., 430; (BECKURTS), 1882, A., 1006.

#### ALKALOIDS—

**Acetoxycodine** (GRIMAU), 1881, A., 1044.  
**Acetylpoaconitine** (WRIGHT and LUFF), 1878, T., 327.  
**Acetylpo- $\psi$ -aconitine** and its salts (WRIGHT and LUFF), 1878, T., 168.  
**Acetylbutyrylmorphine** (BECKETT and WRIGHT), 1875, 20.  
**Acetyl-cinchonidine and -cinchonine** (BECKETT and WRIGHT), 1876, i., 659.  
**Acetylcodeine** (BECKETT and WRIGHT), 1875, 318.



## ALKALOIDS—

**Acetylcodeine**, action of potash and of water on (WRIGHT), 1874, 1039.

**Acetylapoquinamine** (HESSE), 1881, A., 923.

**Acetyl-quinine** and **-quinidine** (BECKETT and WRIGHT), 1876, i., 657.

**Acetyl-solanine** and **-solanidine** (HILGER), 1879, A., 541.

**Acolyctine** (WRIGHT and LUFF), 1878, T., 335.

**Aconelline** (WRIGHT and LUFF), 1878, T., 335.

**Aconine**, its properties, reactions and salts (WRIGHT and LUFF), 1878, T., 318.

ψ-**Aconine** and its reactions and colouring matter from (WRIGHT and LUFF), 1878, T., 160, 318.

*apo*-ψ-**Aconine** (WRIGHT and LUFF), 1878, T., 165.

**Aconitine** (WRIGHT), 1877, i., 148. solubility of, in chloroform (NOWAK), 1873, 412, 535.

action of acids and organic anhydrides on (WRIGHT and LUFF), 1878, T., 324, 327.

action of saponifying agents on (WRIGHT and LUFF), 1878, T., 152, 318, 336.

bases contained in commercial (WRIGHT and LUFF), 1878, T., 174.

colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.

estimation of (ZINOFFSKY), 1874, 497.

*apo*-**Aconitine** (WRIGHT and LUFF), 1878, T., 318, 325, 336.

ψ-**Aconitine**, and its derivatives, preparation, composition and reactions (BECKETT and WRIGHT), 1875, 1265; (WRIGHT and LUFF), 1878, T., 151.

dimethylprotocatechuic acid from (WRIGHT and LUFF), 1878, T., 160, 166.

*apo*-ψ-**Aconitine** (WRIGHT and LUFF), 1878, T., 152, 167, 336.

**Alstonamine** (HESSE), 1879, A., 71.

**Alstonicine** (OBERLIN and SCHLAGDENHAUFFEN), 1880, A., 127.

**Alstonidine** (HESSE), 1881, A., 623.

**Alstonine** (*chlorogenine*) (v. MUELLER and RUMMEL), 1879, T., 31; (OBERLIN and SCHLAGDENHAUFFEN), 1880, A., 127; (HESSE), 1879, A., 332; 1881, A., 623.

**Amygdalic tropeine**. See Hom-atropine.

## ALKALOIDS—

*iso*-**Amyleinchonidine** and its platino-chloride (CLAUS and WELLER), 1882, A., 227.

**Anhydrolupinine** (BAUMERT), 1882, A., 873.

**Anhydrotropeine**. See Atropyltropeine.

**Apomorphine**. See under Morphine.

**Aricine** and its salts (HOWARD), 1875, 309; (HESSE), 1876, ii., 315; 1878, A., 155, 437; 1879, A., 1044; 1882, A., 317.

**Aspidosamine**, and **aspidospermatine** (HESSE), 1882, A., 742.

**Aspidospermine** and its salts (FRAUDE), 1879, A., 470; 1880, A., 54; (WULFSBERG), 1881, A., 108; (HESSE), 1881, A., 294; 1882, A., 742.

supposed identity of, with paytime (ARATA), 1881, A., 622.

**Atisine** (WRIGHT and LUFF), 1878, T., 335.

**Atrolactyltropeine** (*pseudatropine*) (LADENBURG), 1882, A., 984.

**Atropine** (SELM), 1877, i., 93; (LADENBURG), 1879, A., 733; 1880, A., 410, 561, 674; (SCHMIDT), 1880, A., 481; (PESCI), 1881, A., 293; 1882, A., 740.

pharmacological group of (BUCHHEIM), 1877, ii., 196.

preparation of, from Belladonna leaves (LEFORT), 1874, 701.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

action of nitric acid on (PESCI), 1881, A., 293.

decomposition of, in contact with putrefying animal substances (SELM), 1876, ii., 101.

new colour reactions of (VITALI), 1882, A., 340.

colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.

detection of (BRUNNER), 1873, 1062; (CALMBERG), 1876, i., 778.

*apo*-**Atropine** and its salts (PESCI), 1882, A., 740.

**Atropyltropeine** (*anhydrotropeine*) (LADENBURG), 1880, A., 715.

**Baccarine** (ARATA), 1879, A., 1045.

**Belladonnine** (KRAUT), 1880, A., 410.

**Benzoylapoaconitine** (WRIGHT and LUFF), 1878, T., 327.

**Benzoylacetilmorphine** (BECKETT and WRIGHT), 1875, 323.

## ALKALOIDS—

- Benzoyl $\alpha$ - $\psi$ -aconitine** (WRIGHT and LUFF), 1878, T. 171.
- Benzoylcevadine** (WRIGHT and LUFF), 1878, T. 351.
- Benzoylcodeine** (BECKETT and WRIGHT), 1875, 322.
- Benzoyltropeine**, and its salts (LADENBURG), 1880, A., 714.
- Benzoyltropine** (BUCHHEIM), 1877, ii., 196.
- Benzyleinchonine**, and its hydrochloride (CLAUS and TREUPEL), 1881, A., 290.
- Berberine** (VAN DER ESPT), 1873, 919; (WEIDEL), 1879, A., 656; (PARSONS), 1882, A., 1140.  
preparation of (LLOYD), 1880, A., 169.
- Brucine** (SHENSTONE), 1878, A., 326; (CLAUS and RÖHRE), 1881, A., 749.  
in *Bidara Laut* (GREENISH), 1879, A., 1045.  
preparation of (SHENSTONE), 1881, T., 454.  
conversion of strychnine into (SONNENSCHN), 1875, 771.  
absorption-spectra of, in solution (MEYER), 1879, A., 269.  
crystalline form of (LUEDECKE), 1877, ii., 628.  
solubility of, in chloroform (NOWAK), 1873, 412, 535.  
previously dissolved in nitric acid, action of reducing agents on (RÖHRE), 1878, A., 679.  
action of dilute nitric acid on (SHENSTONE), 1877, ii., 499.  
action of, on the organism (PANDER), 1873, 79.  
new salt of (SHENSTONE), 1878, A., 326.
- pyridine bases derived from (OECHSNER DE CONINCK), 1882, A., 1302.
- coloured crystalline compounds from (LINDO), 1878, A., 437.
- iodine compounds of (BAUER), 1875, 466.
- polysulphhydrates (SCHMIDT), 1877, ii., 905.
- dinitro-** (CLAUS and RÖHRE), 1881, A., 749.  
colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.  
detection of (PANDER), 1873, 93; (FLÜCKIGER), 1876, i., 443.  
detection of, by phosphomolybdic acid (v. STRUVE), 1874, 293.

## ALKALOIDS—

- Butyrylcodeine** (BECKETT and WRIGHT), 1875, 321.
- Buxeine**, **buxine**, and **parabuxine** (ALESSANDRI), 1882, A., 745.
- Parabuxine** from *Bucus scampervicens* (PAVESI and ROTONDI), 1875, 178.
- Cacostrychine** (CLAUS and GLASSNER), 1881, A., 747.
- Cacotheline** (CLAUS and RÖHRE), 1881, A., 749.
- Caffeidine**, and its ethiodide and hydrochloride (SCHMIDT), 1881, A., 746.
- Caffeine** (*theine*) and its salts (FISCHER), 1881, A., 614; 1882, A., 217, 628; (SCHMIDT), 1881, A., 746; (BERNHEIMER), 1882, A., 232; (MALY and ANDREASCH), 1882, A., 629.  
extraction of (CAZENEUVE and CAILLOL), 1877, ii., 344; (LEGRIFF and PETIT), 1877, ii., 500.  
extraction of, from guarana (GREENE), 1877, ii., 627.  
conversion of xanthine into (FISCHER), 1882, A., 981.  
solubility of (COMMAILLE), 1876, i., 779.  
solubility of, in chloroform (NOWAK), 1873, 412, 535.  
action of bromine on (MALY and HINTEREGGER), 1882, A., 629.  
variations in the amount of urea excreted under the influence of (ROUX), 1873, 1152; (RABUTEAU), 1873, 1248.  
homologue of (PHILIPS), 1877, i., 93.  
citrate of (LLOYD), 1881, A., 447.  
bromo- (FISCHER), 1881, A., 614.  
estimation of, in tea (LIEVENTHAL), 1873, 411; (WEYRICH), 1873, 1264; (SCHWARZ), 1876, i., 778; (COMMAILLE), 1876, i., 779; (MARKOWNIKOFF), 1877, i., 110; (BLYTH), 1877, ii., 517.
- apoCaffeine** (FISCHER), 1881, A., 614; (MALY and ANDREASCH), 1882, A., 631.
- Caffoline** and its constitution (FISCHER), 1882, A., 217, 628.
- "Californine,"** Winckler's (HESSE), 1879, A., 73.
- Carnine** (SCHÜTZENBERGER), 1878, A., 235.
- Cevadilline**, composition and derivatives of (WRIGHT and LUFF), 1878 T., 343.

## ALKALOIDS—

- Cevadine**, and its salts (SCHMIDT and KÖPPEN), 1876, ii., 530; 1877, ii., 906; 1878, A., 516; (WRIGHT and LUFF), 1878, T., 342.  
 iodine compounds of (BAUER), 1875, 466.  
**Cevilline** and **cevine** (WRIGHT and LUFF), 1878, T., 347.  
**Chenopodine** in coal (REINSCH), 1881, A., 107.  
**Chitenidine** (FORST and BÖHRINGER), 1882, A., 1307.  
**Chitenine** (SKRAUP), 1879, A., 809.  
**Chlorogenine**. See **Alstonine** under **Alkaloids**.  
**Cinchamidine** (HESSE), 1881, A., 1045.  
**Cinchene** and **apocinchene** (KÖNIGS), 1882, A., 224.  
**Cincholine** (HESSE), 1882, A., 1114.  
**Cinchonamine** and its salts (ARNAUD), 1882, A., 229.  
**Cinchonichine** (DRYGIN), 1879, A., 169.  
**Cinchonicine** and **dibromo-** (HESSE), 1876, i., 608; 1878, A., 435.  
**apoCinchonicine** (HESSE), 1881, A., 617.  
**Cinchonidine** and its salts (SKRAUP), 1878, A., 434; 1879, A., 71; (HESSE), 1878, A., 434; 1881, A., 291; 1882, A., 228; (SKRAUP and VORTMANN), 1879, A., 948; (CLAUS), 1881, A., 620.  
 constitution of (SKRAUP), 1880, A., 409.  
 note on Weddell's paper concerning the substitution of, for quinine (PASTEUR), 1877, ii., 344.  
 oxidation of (SKRAUP and VORTMANN), 1879, A., 948; (SKRAUP), 1880, A., 409; 1882, A., 219.  
 oxidation of, with permanganate (DOBBIE and RAMSAY), 1879, T., 189.  
 conversion of, into an oxy-base (SKALWEIT), 1874, 808.  
 compounds of, with thiocyanic acid (HESSE), 1876, ii., 312.  
 double salt of, with urea (DRYGIN), 1882, A., 74.  
 ethyl derivatives and *di*iodoalkyl-compounds of (CLAUS and DANNENBAUM), 1881, A., 183.  
 haloid and hydrocarbon derivatives of (CLAUS and WELLER), 1882, A., 227.  
 iodosulphate (DWARS), 1879, A., 982.  
 platinochloride (HESSE), 1881, A., 922.

## ALKALOIDS—

- Cinchonidine**, quinate, salicylate, and sulphate (HESSE), 1881, A., 291.  
 sulphatoperiodides (JØRGENSEN), 1877, i., 714.  
 optical estimation of, in commercial quinine sulphate (HESSE), 1881, A., 315.  
 separation of, from quinine (DRYGIN), 1882, A., 74.  
 “**Cinchonidine purum**,” commercial; cinchamidine in (HESSE), 1881, A., 1045.  
**apoCinchonidine** (HESSE), 1881, A., 615.  
**Cinchonine** (WEIDEL), 1875, 87; 1877, ii., 343; (SKRAUP), 1878, A., 157; 1879, A., 71; (HESSE), 1878, A., 435; 1881, A., 288; (FILETI), 1879, A., 655.  
 constitution of (SKRAUP), 1879, A., 948; 1880, A., 409; (KÖNIGS), 1882, A., 224.  
 solubility of (PRUNIER), 1879, A., 489.  
 solubility of, in alcohol, chloroform, and in mixtures of the two (OUDEMANS), 1873, 410.  
 solubility of, in chloroform (NOWAK), 1873, 412, 535.  
 action of alkalis on (BUTLEROFF and WISCHNEGRADSKY), 1878, A., 988; (WILLIAMS), 1882, A., 309.  
 action of hydrochloric acid and of nascent hydrogen on (ZORN), 1874, 482.  
 distillation of, with potash (OECHSNER DE CONINCK), 1882, A., 414.  
 distillation of, with zinc (FILETI), 1881, A., 446.  
 oxidation of, with permanganate (DOBBIE and RAMSAY), 1879, T., 189.  
 oxidation products of (HLASIWETZ and WEIDEL), 1873, 1041; (KÖNIGS), 1879, A., 471; (SKRAUP), 1879, A., 948.  
 colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.  
 bases, constitution of (SKRAUP), 1879, A., 810.  
 some derivatives of (WISCHNEGRADSKY), 1880, A., 269.  
 benzyl-derivatives of (CLAUS and TREUPPEL), 1881, A., 290.  
 di-thiodide (CLAUS), 1879, A., 169.  
 and the action of ammonia on (CLAUS and KEMPERDICK), 1881, A., 289.

## ALKALOIDS—

**Cinchonine** dimethiodide (CLAUS and MÜLLER), 1881, A., 289.

etho- and metho-bromide (CLAUS and MÜLLER), 1881, A., 289.

hydro-derivatives of (SKRAUP), 1878, A., 434.

hydrochloride, action of phosphorus pentachloride and oxychloride on (KOENIGS), 1880, A., 673.

iodine compounds of (BAUER), 1875, 466.

iodosulphate (DWARIS), 1879, A., 982.

sulphates, neutral and acid (HESSE), 1881, A., 289.

thiocyanate (HESSE), 1876, ii., 312.

**Cinchonines**, bromo-, transformation of the three, into the corresponding oxybases (KOPP), 1877, i., 323.

*apoCinchonine* (HESSE), 1881, A., 617.

hydrochloride, reactions of (ZORN), 1874, 482.

**Cinchotenicine** (HESSE), 1879, A., 332.

**Cinchotenidine**, and its salts (SKRAUP), 1879, A., 71; (SKRAUP and VORTMANN), 1879, A., 949.

**Cinchotinine** (SKRAUP), 1878, A., 157; 1879, A., 948.

**Cinchotine**, and its salts (ZORN), 1874, 484; (SKRAUP), 1878, A., 157; 1879, A., 71, 948; (FORST and BÖHRINGER), 1881, A., 620, 830; 1882, A., 982.

**Cinnamyltropine** and its salts (LADENDURG), 1880, A., 715.

**Cocaine** (*benzoylmethylecgonine*) (KENNEDY), 1880, A., 169; (SHULL), 1880, A., 411.

preparation of (TRUPHÈME), 1882, A., 75.

**Codeine** (*nethylmorphine*) (GRIMAU), 1881, A., 829; (HESSE), 1881, A., 1154; (V. GERICHTEN), 1882, A., 311; (V. GERICHTEN and SCHRÖTTER), 1882, A., 1112.

transformation of morphine into (DOFF), 1882, A., 981.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

action of acetic acid and anhydride on (WRIGHT), 1874, 1031.

action of benzoic anhydride and butyric acid and anhydride on (BECKETT and WRIGHT), 1875, 15, 21.

action of camphoric, oxalic, succinic, and tartaric acids on (BECKETT and WRIGHT), 1875, 693.

## ALKALOIDS—

**Codeine** (*nethylmorphine*), action of ferric chloride and sulphuric acid on (LINDO), 1878, A., 678.

action of hydrochloric acid on (WRIGHT), 1873, 916.

action of phosphorus oxy- and penta-chloride on (V. GERICHTEN), 1882, A., 311.

action of zinc chloride on (WRIGHT), 1874, 107.

derivatives, action of acetic anhydride, ethylic iodide, and sodium ethoxide on (BECKETT and WRIGHT), 1875, 312.

action of silver nitrate and nitric acid on (WRIGHT), 1873, 1087. physiological action of some (WRIGHT), 1874, 1043.

butyryl and benzoyl derivatives of, and the action of the organic acids and anhydrides on (BECKETT and WRIGHT), 1875, 15.

hydrochloride (HESSE), 1881, A., 1154.

hydroxide, preparation of (BROCKMANN and POLSTORFF), 1880, A., 408; (POLSTORFF), 1880, A., 409.

iodide, action of potassium ferricyanide on (POLSTORFF), 1880, A., 409.

methiodide, and methoxide (GRIMAU), 1881, A., 829; 1882, A., 218.

sulphate, neutral (POLSTORFF), 1880, A., 409.

bromo-, chloro-, and nitro-, and the action of phosphorus pentachloride on (V. GERICHTEN), 1882, A., 312.

tests for (CALMBERG), 1876, i., 778; (HESSE), 1878, A., 688; (TATTERSALL), 1879, A., 1067.

colour reactions of (VITALI), 1882, A., 340.

colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.

**Codethylene** (*ethylmorphine*) and its methiodide (GRIMAU), 1881, A., 829; 1882, A., 218.

**Codomethylene**. See Codeine.

**Colchicine** (HERTEL), 1882, A., 74.

**Colchicine** (ROSENWASSER), 1878, A., 327.

preparation and derivatives of (HERTEL), 1882, A., 74.

substance in beer resembling (VAN GELDERN), 1877, i., 325.



## ALKALOIDS—

**Colchicine**, solubility of, in chloroform (NOWAK), 1873, 412, 535.  
 detection of, by phosphomolybdic acid (v. STRUVE), 1874, 294.  
 toxicological detection of (DANNENBERG), 1877, ii., 516.  
 detection of the mineral acids by means of (FLÜCKIGER), 1876, ii., 324.

**Colloturine** (HESSE), 1879, A., 73.

**Conchine**. See Quinidine.

**Conhydrine** (*oxyconine*) (SCHORM), 1882, A., 215.

**Coniine** and its compounds (SCHORM), 1882, A., 215.

method of obtaining (KIRCHMANN), 1877, i., 716.

constitution of (MICHAEL and GUNDELACH), 1881, A., 825.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

butyric acid from (GRÜNZWEIG), 1873, 373.

hydrobromide and hydrochloride (v. HOFMANN), 1881, A., 745.

estimation of (SOKOLOFF), 1877, ii., 368.

**Paraconiine** (MICHAEL and GUNDELACH), 1881, A., 825; (MICHAEL), 1882, A., 215.

**Coniinenitrosamine** (*azocoinhydrine*) (v. HOFMANN), 1881, A., 746.

**Conquinamine** (*quinidamine*) and its salts (HESSE), 1878, A., 436; 1881, A., 1156; (OUDEMANS), 1881, A., 1154.

rotatory power of (HESSE), 1881, A., 1157.

**Conquinine**. See Quinidine.

**Convicine** (RITTHAUSEN), 1881, A., 1158.

**Coptine** from *Coptis trifolia* (GROSS), 1874, 912.

**Cotarnine** (BECKETT and WRIGHT), 1875, 573; 1876, i., 164, 281, 461; (WRIGHT), 1877, ii., 525; (v. GERICHTEN), 1881, A., 445; 1882, A., 313, 869.

action of ethylic iodide and acetic anhydride on (BECKETT and WRIGHT), 1876, i., 169.

and hydrocotarnine, physiological action of (PIERCE), 1875, 585.

conversion of, into hydrocotarnine (BECKETT and WRIGHT), 1875, 575.

bromo- and its hydrobromide and their reactions (WRIGHT), 1877, ii., 531.

**Crossopterine** (HESSE), 1879, A., 71.

## ALKALOIDS—

**Cupreine** (DAUBRÉE), 1882, A., 142.

**Cuprine** (v. GERICHTEN), 1882, A., 313, 314.

**Cupronine** and its hydrobromide (v. GERICHTEN), 1881, A., 446; 1882, A., 870, 872.

**Curarine** (SACHS), 1878, A., 517.  
 detection of (FLÜCKIGER), 1873, 654.

$\psi$ -**Curarine**, the so-called, and oleandrine (BETTELLI), 1876, i., 404.

**Cuscamidine**, and **cuscamine** and their salts (HESSE), 1880, A., 329.

**Cusconidine** and **cusconine** and their salts (HESSE), 1878, A., 155, 437; 1882, A., 317.

**Daturine** and its salts (SCHMIDT), 1880, A., 481; (LADENBURG and MEYER), 1880, A., 482; (PESCI), 1882, A., 634.

action of nitric acid on (PESCI), 1882, A., 635.

detection of, by phosphomolybdic acid (v. STRUVE), 1874, 295.

**Delphinine**, absorption-spectra of solutions of (HOCK), 1882, A., 349.

test for (TATTERSALL), 1880, A., 763.

**Diacetyl $\alpha$ - $\psi$ -aconine** (WRIGHT and LUFF), 1878, T., 330.

**Diacetylmorphine**, isomeric (BECKETT and WRIGHT), 1875, 25, 315.

**Dibenzoyl $\alpha$ - $\psi$ -aconine** (WRIGHT and LUFF), 1878, T., 330.

**Dibenzoylmorphine** (WRIGHT and RENNIE), 1880, T., 609.

**Dicinchonine** (HESSE), 1878, A., 435.

**Diapocinchonine** (HESSE), 1881, A., 617.

**Dicodeine**, action of acetic anhydride on (BECKETT and WRIGHT), 1875, 312.

**Dicodethylene**. See Ethylenedimorphine.

**Diconchinine** (*apodiquinicine*) (HESSE), 1878, A., 435.

"**Diapodimorphine**" (WRIGHT), 1873, 917.

**Diethylcinchonine** (CLAUS and KEMPERDICK), 1881, A., 289.

**Dimethylconiine** (v. HOFMANN), 1881, A., 745.

**Dimethyltropine** (LADENBURG), 1882, A., 216; (MERLING), 1882, A., 217.

**Ditaine** (*cehitamine*) (v. GORUP-BESANEZ), 1875, 773; (HESSE), 1879, A., 71; 1881, A., 184, 448; (HARNACK), 1879, A., 332; 1881, A., 109.

hydrate (HESSE), 1881, A., 448.

## ALKALOIDS—

**Ditamine** (V. JOBST and HESSE), 1876, i., 276; (HESSE), 1879, A., 71; 1881, A., 448.

**Divicine** (RITTHAUSEN), 1881, A., 1159.

**Duboisine** (GERRARD), 1878, A., 589; (V. MUELLER and RUMMEL), 1879, T., 32; (LADENBURG), 1880, A., 561, 675.

**Echitamine.** See Ditaine.

**Echitenine** (HESSE), 1881, A., 448.

**Emetine** (GLENARD), 1876, i., 275; (PODWYSZOZKI), 1880, A., 720. preparation and composition of (LEFORT and WURTZ), 1877, ii., 628.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

action of, on the organism (PANDER), 1873, 79.

detection of (PANDER), 1873, 93; (POWER), 1877, ii., 933.

estimation of (ZINOFFSKY), 1874, 497.

**Ergotinine** (TANRET), 1876, i., 405; 1878, A., 81, 679.

preparation of (BLUMBERG), 1879, A., 269, 387.

**Erythrophleine** (GALLOIS and HARDY), 1876, ii., 532.

**Eserine** (*physostigmine*), solubility of, in chloroform (NOWAK), 1873, 412, 535.

action of, on the organism (PANDER), 1873, 79.

neutral hydrobromide of (DUQUESNEL), 1875, 1269.

detection of (PANDER), 1873, 93.

estimation of (MASING), 1877, ii., 367.

**Ethyleinchonidine** and its derivatives (CLAUS), 1879, A., 169; (CLAUS and DANNENBAUM), 1881, A., 183.

salts of, rotatory power of (HOWARD), 1873, 1181.

hydrobromide, oxidation of (CLAUS and WELLER), 1882, A., 227.

**Ethyleinchonine** and its ethiodide (CLAUS and KEMPERDICK), 1881, A., 289.

salts of, rotatory power of (HOWARD), 1873, 1182.

**Ethylenedimorphine** (*dicodethylene*) and its hydrochloride (GRIMAU), 1881, A., 1045.

**Ethylmorphine.** See Codethyline.

**Ethylquinidine**, salts of, rotatory power of (HOWARD), 1873, 1181. sulphatoperiodides (JØRGENSEN), 1877, i., 714.

## ALKALOIDS—

**Ethylquinine**, salts of, rotatory power of (HOWARD), 1873, 1180.

**Galactine** (BLYTH), 1879, T., 532.

**Geissospermine** and its salts (HESSE), 1878, A., 433; 1880, A., 675.

**Gelsemine** (HOLMES), 1876, i., 941; (SONNENSCHNIG), 1877, i., 97; (ROBBINS), 1877, ii., 344; (WORMLEY), 1882, A., 1009.

estimation of, in animal liquids and tissues (SCHWARZ), 1882, A., 1141.

**Glycoline** and its derivatives (ETARD), 1881, A., 708.

**Gnoscopine** (T. and H. SMITH), 1878, A., 987.

**Granatine** (DURAND), 1879, A., 170.

**Guanine** (SCHÜTZENBERGER), 1874, 599; 1878, A., 235; (DRECHSEL), 1882, A., 27.

in pigs' urine (PECILE), 1877, i., 330.

in salmon roe (PICCARD), 1875, 566.

constitution of (GRIMAU), 1877, ii., 741.

reaction of (CAPRANICA), 1881, A., 655.

hydrochloride, action of picric acid on (CAPRANICA), 1881, A., 655.

**Herapathite.** See Quinine sulphatoperiodide.

**Homatropine** (*amygdalic tropine*; *oxytoluoyltropine*) (LADENBURG), 1880, A., 410, 714, 815; 1881, A., 420.

**Homocinchonine** (HESSE), 1878, A., 436.

**Homocinchonidine** and its salts (HESSE), 1878, A., 435; 1881, A., 291; 1882, A., 228; (SKRAUP), 1880, A., 270.

diethiodide (CLAUS), 1879, A., 169.

phenyl sulphate, neutral (HESSE), 1881, A., 292.

platinochloride (HESSE), 1881, A., 922.

methyl derivatives of (CLAUS and BOCK), 1881, A., 184.

**Homocinchonine** (HESSE), 1878, A., 435.

**Homohydrapatropine** and its salts (PESCI), 1882, A., 1218.

**Homoquinine** and its salts (HOWARD and HODGKIN), 1882, T., 66.

**Hydrastine** (VAN DER ESPT), 1873, 919; (LLOYD), 1880, A., 169.

**Hydrapatropine**, action of potassium permanganate on (PESCI), 1882, A., 1217.

## ALKALOIDS—

**Hydrobrucine** (SHENSTONE), 1881, T., 461.

**Hydrocinchonidine** (FORST and BÖHRINGER), 1881, A., 830; 1882, A., 982.

**Hydrocinchonine** (ZORN), 1874, 484.

**Hydrocotarnine** and its reactions (BECKETT and WRIGHT), 1875, 573; 1876, i., 164, 281, 461; (WRIGHT), 1877, ii., 525.

and its ethyl chloride, physiological action of (PIERCE), 1875, 585; 1876, i., 170.

bromo-, and hydrobromide, preparation of (WRIGHT), 1877, ii., 529.

tribromo-, hydrobromide, preparation and chemical reactions of (WRIGHT), 1877, ii., 532.

**Hydroquinidine** (*hydroconquinine*) (FORST and BÖHRINGER), 1882, A., 74, 982, 1306; (HESSE), 1882, A., 1113.

**Hydroquinine** and its salts (HESSE), 1882, A., 1113.

**Hydrotropine iodide** (LADENBURG), 1881, A., 263.

**Hydroxydimethoxycaffeine** (FISCHER), 1881, A., 614.

**Hydroxytoluoyltropeine**. See Homatropine.

**Hygrine** (KENNEDY), 1880, A., 169.

**Hyoscine** and its derivatives (LADENBURG), 1880, A., 674; 1881, A., 56, 446; 1882, A., 229.

**Hyoscyamine** (MERCK), 1873, 641; (THIBAUT), 1876, ii., 100; (LADENBURG), 1880, A., 411, 561, 675; (DUQUESNEL), 1882, A., 535.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

new colour reactions of (VITALI), 1882, A., 341.

**Hypocaffeine** and its salts (FISCHER), 1881, A., 614; 1882, A., 217.

**Hypoquebrachine** (HESSE), 1882, A., 743.

**Hypoxanthine**. See Sarcine under Alkaloids.

**Igasurine** (SHENSTONE), 1880, T., 235; 1881, T., 457.

**Jaborandine**, nitrate and hydrochloride of (CHASTAING), 1882, A., 1115.

**Jaborine** (HARNACK and MEYER), 1880, A., 898.

**Japaconine**, and japaconitine and their reactions (WRIGHT and LUFF), 1879, T., 393.

**Javanine** (HESSE), 1878, A., 437.

## ALKALOIDS—

**Jervine** (MITCHELL), 1874, 590; 1875, 1267; (WRIGHT and LUFF), 1878, T., 335; 1879, T., 407; (TOBIEN), 1878, A., 589; (WRIGHT), 1879, T., 421; (BULLOCK), 1880, A., 170.

does *Veratrum viride* contain an alkaloid other than? (BULLOCK), 1876, ii., 530.

ψ **Jervine** (WRIGHT and LUFF), 1879, T., 407, 413, 419; (WRIGHT), 1879, T., 421.

**Loturine** and **loturidine** (HESSE), 1879, A., 73.

**Loxopterygine** from the bark of *Quebracho Colorado* (*Loxopterygium Lorentzii*) (HESSE), 1882, A., 744.

**Lupinine**, and its derivatives and reactions (BAUMERT), 1881, A., 831; 1882, A., 229, 873.

**Lycotoniine** (WRIGHT and LUFF), 1878, T., 335.

**Lycopodine** (BÖDEKER), 1881, A., 1158.

**Macleyine** (EIJKMAN), 1882, A., 1112.

**Meconine** (HESSERT), 1878, A., 419. action of fused potash on (BECKETT and WRIGHT), 1876, i., 306.

**Mercurialine** (*methylumine*) (SCHMIDT), 1879, A., 40.

See also Methylamine.

**Methyleinchonine** and its dimethiodide (CLAUS and MÜLLER), 1881, A., 289.

**Methylconine**, synthesis of (MICHAEL and GUNDELACH), 1881, A., 825.

**Methylhomocinchonidine**, and its derivatives (CLAUS and BOCK), 1881, A., 184.

**Methylpelletierine** (TANRET), 1880, A., 481.

**Methylquinine**, and its methiodide (CLAUS and MALLMANN), 1881, A., 619.

sulphatoperiodides (JÖRGENSEN), 1877, i., 212.

**Methyltropine**, and its derivatives (LADENBURG), 1882, A., 216; (MERLING), 1882, A., 216.

β-**Methyltropine** (LADENBURG), 1882, A., 216.

**Morphine** from *Fructus papaveris* (KRAUSE), 1876, i., 777.

absence of, from the petals of *Papaver Rhoeas* (ATTFIELD), 1874, 911.

constitution of (CHASTAING), 1881, A., 921.

complex character of (CHASTAING), 1882, A., 413.

## ALKALOIDS—

**Morphine**, absorption-spectra of, in solution (MEYER), 1879, A., 269.  
 solubility of (CHASTAING), 1882, A., 413.  
 insolubility of, in chloroform (NOWAK), 1873, 412, 535.  
 action of acetic acid and anhydride on (WRIGHT), 1874, 1033.  
 action of benzoic and butyric acids, and anhydrides on (BECKETT and WRIGHT), 1875, 16.  
 action of benzoic chloride on (POLSTORFF), 1880, A., 407; (WRIGHT and RENNIE), 1880, T., 609.  
 action of camphoric, oxalic, and succinic acids on (BECKETT and WRIGHT), 1875, 692.  
 action of hydrochloric and sulphuric acids on (MAYER and WRIGHT), 1873, 215.  
 action of iodic acid, sulphomolybdic acid, and ferric chloride on (ANON.), 1879, A., 70.  
 action of atmospheric oxygen in ammoniacal solution, and of potassium permanganate on (BROCKMANN and POLSTORFF), 1880, A., 408.  
 action of potassium ferricyanide on (POLSTORFF), 1880, A., 408.  
 action of sulphuric acid and oxidising agents on (LINDO), 1877, ii., 906; 1878, A., 678.  
 action of zinc chloride on (MAYER and WRIGHT), 1873, 211.  
 distillation of, with zinc dust (v. GERICHTEN and SCHRÖTTER), 1882, A., 530, 1112.  
 transformation of, into codeine and homologous bases (GRIMAU), 1881, A., 829; (DOTT), 1882, A., 981.  
 transformation of, into picric acid (CHASTAING), 1882, A., 413.  
 fate of, in the animal body (LANDSBERG), 1882, A., 543.  
 occurrence of, in the excreta (VOGT), 1876, i., 280.  
 a new alkaloid from (NADLER), 1874, 589.  
 a new series of bases derived from (GRIMAU), 1882, A., 218.  
 iodine compounds of (BAUER), 1875, 466.  
 derivatives, action of heat and of silver nitrate and nitric acid on (MAYER and WRIGHT), 1873, 1085.

## ALKALOIDS—

**Morphine** derivatives, action of acetic anhydride, ethylic iodide, and sodium ethoxide on (BECKETT and WRIGHT), 1875, 312.  
 physiological action of some (PIERCE), 1874, 1043.  
 acetylated, and analogous products, action of ethylic iodide and sodium ethoxide on (BECKETT and WRIGHT), 1875, 318.  
 action of water and diluted alkaline solutions on (WRIGHT), 1874, 1039.  
 butyryl and benzoyl derivatives of (BECKETT and WRIGHT), 1875, 15.  
 ethereal derivatives of (GRIMAU), 1881, A., 1045.  
 oxidation-products of (CHASTAING), 1882, A., 73.  
 some oxidation and decomposition products of (MAYER and WRIGHT), 1873, 1082.  
 salts of (CHASTAING), 1881, A., 921.  
 action of oxidising agents and sulphuric acid on (LINDO), 1877, ii., 906; 1878, A., 678.  
 hydriodide and hydrobromide (SCHMIDT), 1877, ii., 343.  
 hydrobromide, preparation of (MACDONALD), 1874, 590.  
 hydrochloride (HESSE), 1880, A., 673.  
 methyl ether of (HESSE), 1881, A., 1153.  
 oleate of mercury and (RICE), 1873, 510.  
 polymerides of, and their derivatives and physiological action (MAYER and WRIGHT), 1873, 211, 228.  
 detection of (v. STRUVE), 1874, 294; (HUSEMANN), 1876, i., 777; (PELLAGRI), 1877, ii., 808; (BURI), 1878, A., 755; (LINDO), 1878, A., 1013; (TATTERSALL), 1880, A., 763; (GRIMAU), 1881, A., 1044.  
 new colour reactions of (VITALI), 1882, A., 340.  
 colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.  
 iodic acid as a test for (BELI), 1880, A., 68.  
 phosphomolybdic acid as a test for (v. STRUVE), 1874, 295.  
 detection of, in quinine (HAGER), 1873, 535; 1877, i., 748; (FREDERKING), 1874, 1105.  
 estimations (LYNN), 1878, A., 612.



## ALKALOIDS—

**Morphine**, estimation of, in opium (TESCHEMACHER), 1877, ii., 231; (MYLIUS), 1880, A., 829; 1881, A., 945.

*apo***Morphine** (WRIGHT), 1873, 917; (OBERLIN), 1876, i., 274.

formation of, by the action of hydrochloric acid on morphine (MAYER and WRIGHT), 1873, 215.

reactions of (KÖHLER and QUEHL), 1874, 589.

colour reaction of with antimony trichloride (SMITH), 1879, A., 831.

blue colouring matter obtained from, by oxidation of (MAYER and WRIGHT), 1873, 1033.

polymeride of (MAYER and WRIGHT), 1873, 212.

**Napelline**, Hübschmann's (WRIGHT and LUFF), 1878, T., 335.

**Narceine**, solubility of, in chloroform (NOWAK), 1873, 412, 535.

action of acetic anhydride, of ethylic iodide, and of nascent hydrogen on (BECKETT and WRIGHT), 1875, 701.

action of oxidising agents on (BECKETT and WRIGHT), 1876, i., 467.

hydrochloride (PETIT), 1873, 510; (WRIGHT), 1874, 109.

sulphates, and other derivatives (BECKETT and WRIGHT), 1875, 699.

test for (VOGEL), 1874, 1183.

colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.

**Narcotine** (*opianine*) (BECKETT and WRIGHT), 1875, 573; 1876, i., 164, 281, 461; (HESSE), 1876, i., 607; (WRIGHT), 1877, ii., 525.

from *Fructus papaveris* (KRAUSE), 1876, i., 777.

structural formulæ of (WRIGHT), 1876, i., 170.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

action of acetic anhydride and of ethylic iodide on (BECKETT and WRIGHT), 1876, i., 167.

action of boiling baryta water, of nascent hydrogen and of water on (BECKETT and WRIGHT), 1875, 582.

colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.

## ALKALOIDS—

**Narcotine** (*opianine*) derivatives, structural formulæ of (WRIGHT), 1876, i., 170.

hydrochloride, action of water on (BECKETT and WRIGHT), 1876, i., 164.

**Nicotine** (WEIDEL), 1873, 508; (LAIBLIN), 1878, A., 432; (ANDREONI), 1879, A., 731; (CAHOURS and ETARD), 1881, A., 288.

in tobacco smoke (HEUBEL), 1873, 760; (KISSLING), 1882, A., 906, 1253.

preparation of (LAIBLIN), 1879, A., 808.

method of obtaining (KIRCHMANN), 1877, i., 716.

specific gravity of, and of its aqueous solutions (SKALWEIT), 1882, A., 216.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

action of hydrochloric and hydriodic acids on (ANDREONI), 1879, A., 731.

action of selenium on (CAHOURS and ETARD), 1881, A., 825.

action of sulphur on (CAHOURS and ETARD), 1879, A., 732.

oxidation of (CAHOURS and ETARD), 1879, A., 732.

oxidation-products of (LAIBLIN), 1879, A., 808.

derivatives of (CAHOURS and ETARD), 1879, A., 732; 1880, A., 672.

bromides (CAHOURS and ETARD), 1880, A., 815; (LAIBLIN), 1880, A., 897; (GRIMAU), 1882, A., 1215.

double chloride of, with zinc, distillation of, with soda-lime (LAIBLIN), 1879, A., 808.

and colehicine, detection of, in medico-legal investigations (v. STRUVE), 1874, 293.

colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.

estimation of, in tobacco (ZINOFFSKY), 1874, 497; (IRBY and CABELL), 1875, 289; (SKALWEIT), 1882, A., 108; (KISSLING), 1882, A., 1005.

**Nitryltropeine** (LADENBURG), 1882, A., 984.

**Octoapopotetramorphine** (MAYER and WRIGHT), 1873, 214; (WRIGHT), 1873, 918.

**Oleandrine** (BETTELLI), 1876, i., 404.

## ALKALOIDS—

**Opianine.** See Narcotine under Alkaloids.

**Oscine** (*ψ-tropine*) and its salts (LADENBURG), 1881, A., 56.

**Oxyacanthine** (PARSONS), 1882, A., 1140.

**Oxybenzoyltropeine**, *m*- and *p*-, and their salts (LADENBURG), 1880, A., 714.

**Oxyapocinchene** (KOENIGS), 1882, A., 224.

**Oxyechitamine** (HESSE), 1881, A., 448.

**Oxylupinine** (BAUMERT), 1882, A., 873.

**Oxymorphine** (*oxylimorphine*) and its salts (POLSTORFF; BROCKMANN and POLSTORFF), 1880, A., 408.  
hydrate (CHASTAING), 1882, A., 73.

**Oxynarcotine**, isolation of, and the action of oxidising agents on (BECKETT and WRIGHT), 1876, i., 461.

**Oxytoluoyltropeine** (*homotropine*) and its salts (LADENBURG), 1880, A., 410, 715, 815; 1881, A., 420.

**Perpaverine**, solubility of, in chloroform (NOWAK), 1873, 412, 535.  
new test for (TATTERSALL), 1879, A., 1067.

colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.

**Paricine** (HESSE), 1878, A., 437; 1879, A., 1044.

**Paytamine** (HESSE), 1878, A., 437.

**Paytine** (HESSE), 1878, A., 437; (WULFENBERG), 1881, A., 108.  
and aspidospermine, supposed identity of (ARATA), 1881, A., 622.

**Pelletierine** (TANRET), 1878, A., 739; 1879, A., 170, 657; 1880, A., 481.

homologue of (ETARD), 1881, A., 1046.

*iso*Pelletierine and *ψ*-pelletierine (TANRET), 1880, A., 481.

**Pereirine** (HESSE), 1878, A., 433; 1880, A., 676.

**Phenylacetropoieine hydrochloride** (LADENBURG), 1882, A., 984.

**Phenylhomocinchonidines** (CLAUS and BÄTCKE), 1881, A., 184.

**Phthalyltropeine** (LADENBURG), 1880, A., 411, 715.

**Physostigmine.** See Eserine.

**Picraconitine** (WRIGHT), 1877, i., 146.

## ALKALOIDS—

**Picraconitine**, action of saponifying agents on (WRIGHT and LUFF), 1878, T., 336.

decomposition products of (WRIGHT and LUFF), 1878, T., 332.

**Picraconine** (WRIGHT and LUFF), 1878, T., 332.

**Pilocarpine.** See Pilocarpine.

**Piperine** (KOENIGS), 1880, A., 404.  
preparation of (RÜGHEIMER), 1882, A., 1217.

in pepper, extraction and estimation of (CLAZENEUVE and CAILLOL), 1877, ii., 516.

pharmacological group of (BUCHHEIM), 1877, ii., 195.

detection of (v. STRUVE), 1874, 294.

**Porphyrene** and **porphyrosine** (HESSE), 1881, A., 624.

**Propionylquinine** (HESSE), 1881, A., 620.

**Protopine.** See Macleyine.

**Protoquinamicine** (HESSE), 1878, A., 436; 1881, A., 925.

**Quebrachamine** (HESSE), 1882, A., 743.

**Quebrachine** and its salts (HESSE), 1881, A., 291; 1882, A., 742.

**Quinamicine** (HESSE), 1878, A., 436; 1881, A., 924.

**Quinamidine**, and its salts (HESSE), 1878, A., 436; 1881, A., 924, 925.

**Quinamine** and its salts (DE VRIJ), 1874, 588; (HESSE), 1878, A., 436; 1880, A., 270; 1881, A., 922; (OUDEMANS), 1879, A., 1044.

and its derivatives, rotatory powers of (HESSE), 1881, A., 926.

action of acetic anhydride, ethylic iodide, and acids on (HESSE), 1881, A., 923.

*apo*Quinamine, and its salts (HESSE), 1878, A., 436; 1881, A., 922.

**Quinicine** (HESSE), 1876, i., 608; 1878, A., 435.

**Quinidine** (*conquinine*) (DE VRIJ), 1875, 184; (HESSE), 1875, 282; 1878, A., 434, 801.

action of hydrochloric acid on (ZORN), 1874, 483.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

oxidation of, with permanganate (DOBBIE and RAMSAY), 1879, T., 189.

acetylated base from (BECKETT and WRIGHT), 1876, i., 658.

compound of, with quinine (WOOD and BARRET), 1882, A., 414.

## ALKALOIDS—

- Quinidine** (*conquinine*), compounds of, with thiocyanic acid (HESSE), 1876, ii., 312.  
 double salt of urea and (DRYGIN), 1882, A., 74.  
 iodosulphate (DWARS), 1879, A., 982.  
 platinochloride (HESSE), 1881, A., 922.  
 sulphate (DE VRIJ), 1878, A., 588; (HESSE), 1878, A., 988; 1879, A., 656.  
 fluorescence of (SCHÄR), 1877, i., 93.  
 sulphatoperiodides (JÖRGENSEN), 1877, i., 713.  
 test for (HESSE), 1875, 918; 1879, A., 281.  
*apo*Quinidine (HESSE), 1881, A., 616.  
**Quinine** (PRESCOTT), 1877, ii., 933; (HESSE), 1878, A., 434.  
 physical properties of (REGNAULD), 1876, i., 274.  
 effect of temperature on the power of solutions of, to rotate polarised light (DRAPER), 1877, i., 322.  
 action of light on (FLÜCKIGER), 1878, A., 588.  
 solubility of, in chloroform (NOWAK), 1873, 412, 535.  
 solubility of, in ether and in water (PRESCOTT), 1877, ii., 933.  
 action of alkalis on (BUTLEROFF and WISCHNEGRADSKY), 1878, A., 988.  
 action of hydrochloric acid on (ZORN), 1874, 483.  
 action of a mixture of nitric and sulphuric acids on (RENNIE), 1881, T., 469.  
 oxidation of (RAMSAY and DOBBIE), 1878, T., 102; 1879, T., 189; (HOOGWERFF and VAN DORP), 1878, A., 297; 1879, A., 541, 946; (SKRAUP), 1879, A., 809; 1882, A., 220.  
 removal of nitrogen from (BOEKE), 1873, 1041.  
 acetylated base from (BECKETT and WRIGHT), 1876, i., 657.  
 formation of cinchomeronic acid from (WEIDEL and v. SCHMIDT), 1879, A., 947.  
 compounds of (DRYGIN), 1879, A., 169; (RENNIE), 1881, T., 469.  
 compound of, with cupric acetate, and with silver nitrate (SKRAUP), 1882, A., 219.  
 compound of, with methylquinine (JÖRGENSEN), 1877, i., 212.

## ALKALOIDS—

- Quinine**, compound of, with quinidine (WOOD and BARRET), 1882, A., 414.  
 compounds of, with thiocyanic acid (HESSE), 1876, ii., 312.  
 decomposition products of (DOBBIE and RAMSAY), 1879, T., 189.  
 hydrate, new (OUDEMANS), 1874, 168.  
 salts, action of potassium thiocyanate on (SCHRAGE), 1878, A., 903.  
 with salicylic acid, and with phenol (v. JOBST), 1876, i., 610.  
*isobutylformate* (SCHMIDT and SACHTLEBEN), 1879, A., 139.  
 citrate, dibasic, economical process for preparing (DOTTO-SCRIBANI), 1880, A., 126.  
 citrates (MANDELIN), 1879, A., 1043.  
 diethiodide (SKRAUP), 1882, A., 218.  
 dimethiodide and ethomethiodide (CLAUS and MALLMANN), 1881, A., 619.  
 hydrobromide, preparation of (MACDONALD), 1874, 590.  
 hydrobromides, and preparation of the neutral hydrobromide (BOILLÉ), 1875, 276.  
 hydrochloride, remarkable behaviour of (VULPIUS), 1882, A., 1113.  
 double salt of urea and (DRYGIN), 1882, A., 74.  
 test for (HESSE), 1879, A., 281.  
 test for morphine in (FREDERKING), 1874, 1105.  
 iodate and bromate, physiological activity of superoxygenated molecules, especially those of (CAMERON), 1882, A., 879.  
 iodine compounds of (BAUER), 1875, 466.  
 iodosulphate (DWARS), 1879, A., 982.  
 formation of, in presence of morphine (STUART), 1882, A., 1005.  
 meconate (AUSTEN), 1873, 1148.  
 methethiodide, methiodide, methobromide, and methochloride (CLAUS and MALLMANN), 1881, A., 619.  
 platinochloride (HESSE), 1881, A., 922.  
 selenate and sulphate (HIORTDAHL), 1880, A., 54.  
 sulphate, official test for quinine and water of crystallisation of (HESSE), 1881, A., 63.

## ALKALOIDS—

- Quinine sulphate**, the pharmacopœia test of (PAUL), 1877, ii., 642.  
 test for foreign alkaloids in (KERNER), 1881, A., 63.  
 commercial, optical estimation of cinchonidine in (HESSE), 1881, A., 315.  
 sulphatoperiodido (*herapathite*), influence of morphine on the formation of (STUART), 1882, A., 1005.  
 sulphatoperiodides (JÖRGENSEN), 1877, i., 210.  
 tannates, and the best method of analysing them (v. JOEST), 1878, A., 678.  
*diuitro-* (RENNIE), 1881, T., 470.  
 substitutes for (HESSE), 1879, A., 71.  
 substitution of cinchonidine for (PASTEUR), 1877, ii., 344.  
 influence of crystalline and amorphous, on the white blood-corpuscles, and on the formation of pus (KERNER), 1873, 647.  
 action of, in restraining the ozonising power of blood and of hemoglobin (MÜLLER), 1873, 288.  
 suggestions regarding the preparation to be used when it is employed as a medicine (DRAPER), 1877, i., 322.  
 tests for (BIEL), 1873, 410; (HESSE), 1879, A., 280; (DWARS), 1879, A., 982.  
 colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.  
 detection of morphine in (HAGER), 1873, 535.  
 salts, testing of, for strychnine and morphine (HAGER), 1877, i., 748.  
 estimation of (DE VRIJ), 1876, i., 964; 1882, A., 560; (ALLEN), 1876, ii., 664; (FLETCHER), 1880, A., 63; (BLYTH), 1881, A., 1176.  
 estimation of, as herapathite (CHRISTENSEN), 1882, A., 341.  
 estimation of, in *ferri et quina citras*, B.P. (PALMER), 1876, ii., 664; (PRESCOTT), 1877, ii., 933; (STEVENSON), 1879, A., 405.  
 estimation of, in certain of its salts (DWARS), 1879, A., 488.  
 estimation of, by precipitating with an acid solution of sodium phosphomolybdate, and potassiummercuric iodide (PRESCOTT), 1877, ii., 933.  
 separation of cinchonidine from (DRYGIN), 1882, A., 74.

## ALKALOIDS—

- Quinine wine**, estimation of alkaloids in (SCHACHT), 1881, A., 204.  
*apo*Quinine (HESSE), 1881, A., 616.  
**Quinoidine borate**, crystalline (v. JOEST), 1881, A., 56.  
 as a febrifuge (DE VRIJ), 1881, A., 1154.  
**Ratanhine** (KREITMAIR), 1875, 1038.  
**Rhœadine** (HESSE), 1878, A., 157.  
**Ricinine** from *Ricinus communis* (*castor oil plant*) (WAYNE), 1874, 706.  
**Rubijervine** (WRIGHT and LUFF), 1879, T., 407; (WRIGHT), 1879, T., 422.  
**Sabadilline** (WRIGHT and LUFF), 1878, T., 339.  
 solubility of, in chloroform (NOWAK), 1873, 412, 535.  
 estimation of (MASING), 1877, ii., 367.  
**Sabatrine** (WRIGHT and LUFF), 1878, T., 339.  
 estimation of (MASING), 1877, ii., 367.  
**Salicyltropeine** (*o-hydroxybenzoyl tropeine*) (LADENBURG), 1880, A., 410, 714.  
**Sarcine** (*hyposanthine*) (SCHÜTZENBERGER), 1878, A., 235; (SALOMON), 1878, A., 588; (KRAUSE and SALOMON), 1879, A., 471.  
 from albuminoids (DRECHSEL), 1880, A., 672; (SALOMON), 1880, A., 897.  
 origin of, in the organism (SALOMON), 1879, A., 176; (KOSSEL), 1882, A., 759.  
 distribution of, in the animal and vegetable kingdom (KOSSEL), 1882, A., 79.  
 occurrence of, in potatoes (SCHULZE), 1882, A., 1125.  
 in salmon roe (PICCARD), 1875, 566.  
 constitution of (GRIMAU), 1877, ii., 741.  
 some reactions of (ENGEL), 1876, i., 943.  
**Septicine**, an alkaloid formed during putrefaction (HAGER), 1876, i., 405.  
**Solanidine**, composition of (HILGER), 1879, A., 541.  
 detection of (SELM), 1874, 607.  
**Solanine** in *Solanum Lycopersicum* (KENNEDY), 1873, 918.  
 and the products of its decomposition (HILGER), 1879, A., 541.  
 insolubility of, in chloroform (NOWAK), 1873, 412, 535.



## ALKALOIDS—

- Solanine**, detection of (BACH), 1873, 1263; (SELM), 1874, 607.  
detection of, in potatoes (ANON.), 1874, 297.
- Sophorine** (WOOD), 1878, A., 802.
- Sparteine**, method of obtaining (KIRCHMANN), 1877, i., 716.
- Sphingosine** (THUDICHUM), 1882, A., 537.
- Spigeline**, a volatile alkaloid (DUDLEY), 1881, A., 1153.
- Strychnine** (GAL and ETARD), 1879, A., 387; (CLAUS and GLASSNER), 1881, A., 747.  
in false angostura bark (SHENSTONE), 1878, A., 326.  
isolation of (ALLEN), 1881, A., 1176.  
absorption-spectra of, in solution (MEYER), 1879, A., 269.  
solubility of, in chloroform (NOWAK), 1873, 412, 535.  
action of acetic anhydride on (BECKETT and WRIGHT), 1876, i., 655.  
action of nitric acid on, and decomposition of (SCHIFF), 1878, A., 679.  
conversion of, into brucine (SONNENSCHN), 1875, 771.  
hydrate (JAHNS), 1882, A., 74.  
chlorinated derivatives of (RICHT and BOUCHARDET), 1881, A., 292.  
hydrobromide, preparation of (MACDONALD), 1874, 590.  
iodine-compounds of (BAUER), 1875, 467.  
compound of, with iodoform (LEXTREIT), 1881, A., 748.  
platinochloride, action of potassium thiocyanate on (CLARKE and OWENS), 1882, A., 299.  
polysulphhydrates (v. HOFMANN), 1877, ii., 789; (SCHMIDT), 1877, ii., 905.  
sulphate (RAMMELSBURG), 1881, A., 831.  
nitro- (SCHIFF), 1878, A., 679.  
*α*-dinitro-, and its nitrate (CLAUS and GLASSNER), 1881, A., 748.  
reaction of, with antimony trichloride (SMITH), 1879, A., 832.  
detection of, by phosphomolybdic acid (v. STRUBE), 1874, 294.  
detection and separation of, in chemico-legal investigations (GRAY; LYMAN), 1873, 194, 1265.
- “**Sulphomorphide**.” See Tetramorphine sulphate.

## ALKALOIDS—

- Tarconine** (WRIGHT), 1877, ii., 541.  
compound of, with thallium iodide (JÖRGENSEN), 1873, 476.  
bromo-, and its salts and reactions (WRIGHT), 1877, ii., 541; (v. GERICHTEN), 1882, A., 313, 869.
- Tarnine**, and its hydrobromide (v. GERICHTEN), 1881, A., 446; 1882, A., 870.
- Taxine** from the yew tree (*Taxus baccata*) (MARMÉ), 1877, i., 476; (AMATO and CAPPARELLI), 1880, A., 899.
- Tetrabenzoylmorphine**, action of benzoic anhydride and of water on (BECKETT and WRIGHT), 1875, 24.  
ethiodide (BECKETT and WRIGHT), 1875, 322.
- Tetrabutylmorphine**, action of water on (BECKETT and WRIGHT), 1875, 19.  
ethiodide (BECKETT and WRIGHT), 1875, 322.
- Tetracetylmorphine**, action of benzoic anhydride on (BECKETT and WRIGHT), 1875, 25.  
ethiodide (BECKETT and WRIGHT), 1875, 319.
- Tetracetylcodeine**, action of ethylic iodide on (BECKETT and WRIGHT), 1875, 314.
- Tetracodeine** (WRIGHT), 1874, 107.  
action of acetic anhydride and of ethylic iodide on (BECKETT and WRIGHT), 1875, 313.  
product obtained from, by the action of silver nitrate and nitric acid (WRIGHT), 1873, 1088.
- Tetraapodimorphine**. See *apomorphine*.
- Tetramorphine**, action of acetic anhydride on (BECKETT and WRIGHT), 1875, 314.  
product obtained from, by the action of silver nitrate and nitric acid (WRIGHT), 1873, 1088.  
sulphate (*sulphomorphide*) (MAYER and WRIGHT), 1873, 222.  
physiological action of (MAYER and WRIGHT), 1873, 224.
- Tetraapotetramorphine** (WRIGHT), 1873, 917.
- Thalictrine** (*macrocarpine*) (DOASSANS), 1881, A., 52; (HANRIOT and DOASSANS), 1881, A., 52.
- Thebaine**, solubility of, in chloroform (NOWAK), 1873, 412, 535.  
colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.

## ALKALOIDS—

**Theine.** See Caffeine.

**Theobromine** (DRAGENDORFF), 1878, A., 903; (MALY and HINTEREGGER), 1881, A., 747; (FISCHER), 1882, A., 628; (MALY and ANDREASCH), 1882, A., 629.

from cacao (TROJANOWSKY), 1877, ii., 363.

conversion of xanthine into (FISCHER), 1882, A., 981.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

action of chlorine, and of potassium chlorate and hydrochloric acid on (MALY and ANDREASCH), 1882, A., 633.

estimation of, in cacao and chocolate (WOLFRAM), 1879, A., 406.

*apo*Theobromine (MALY and ANDREASCH), 1882, A., 633.

**Tolyquinines** (CLAUS and BOTTLER), 1881, A., 620.

**Trianospermine** (PARODI), 1880, A., 722.

**Tribenzoylmorphine** (POLSTORFF), 1880, A., 407.

**Tricodaine** (WRIGHT), 1874, 107.

**Trihydrostrychnine** (GALAND ETARD), 1879, A., 387.

*mono-, di-, and tri-chloro-* (RICHER and BOUCHARDAT), 1881, A., 293.

**Trimethylconylammonium hydrate.** See Dimethyleoniine.

**Trimorphine**, physiological action of, and the action of hydrochloric acid on (MAYER and WRIGHT), 1873, 224.

**Tropeines** (LADENBURG), 1880, A., 714; 1881, A., 420, 1157; 1882, A., 984.

**Tropigenine**, and its derivatives (MERLING), 1882, A., 739; (PESCI), 1882, A., 1218.

**Tropine**, and its derivatives (LADENBURG), 1882, A., 216; (MERLING), 1882, A., 216, 739; (KRAUT), 1882, A., 415; (PESCI), 1882, A., 740. and its derivatives, attempted synthesis of (LADENBURG), 1882, A., 534.

constitution of (LADENBURG), 1881, A., 263.

oxidation of (MERLING), 1882, A., 740.

decomposition of (LADENBURG), 1882, A., 216, 983, 1206.

tropate, action of hydrochloric acid on (LADENBURG), 1879, A., 733.

ψ-Tropine. See Oscine.

## ALKALOIDS—

"**Ultraquinine**" (WHIFFEN), 1882, A., 317.

**Veratralbine** (WRIGHT and LUFF), 1879, T., 415; (WRIGHT), 1879, T., 422.

**Veratrine** and its salts (WRIGHT and LUFF), 1878, T., 339, 346, 353. absorption-spectra of, in solution (MEYER), 1879, A., 269.

solubility of, in chloroform (NOWAK), 1873, 412, 535.

colour reaction of, with antimony trichloride (SMITH), 1879, A., 832.

estimation of (MASING), 1877, ii., 367.

**Veratroidine** (MITCHELL), 1875, 1267; (TOBIEN), 1878, A., 589.

**Veridine** (MITCHELL), 1875, 1267.

**Verine** (WRIGHT and LUFF), 1878, T., 354.

**Vicine** (RITTHAUSEN), 1876, i., 936; 1881, A., 1158.

**Xanthinine** (GRIMAU), 1879, A., 784.

**Alkaloids.** See also Ptomaines.

**Alkameines and alkamines** (LADENBURG), 1881, A., 1157.

**Alkannin** (CARNELUTTI and NASINI), 1881, A., 53.

**Alkines** (LADENBURG), 1882, A., 165, 1193.

**Alkyldisulphoxide.** See Ethylicethane-thiosulphonate.

**Alkylhydroxanthranols** and their derivatives (LIEBERMANN), 1881, A., 608; (LIEBERMANN and LANDSHOFF), 1882, A., 860.

**Alkyl-hydroxy and -oxy acids**, boiling points of ethereal salts of (SCHREINER), 1879, A., 522.

**Allanite**, analysis of, from a new Virginian locality (CABELL), 1874, 1144.

products of weathering of (SANTOS), 1878, A., 947.

**Allantoic acid** (PONOMAREFF), 1879, A., 228, 461.

**Allantoin**, identity of, with glyoxylic diureide (GRIMAU), 1877, ii., 741. occurrence of, in dog's urine (SALKOWSKI), 1878, A., 594.

occurrence of, in vegetable organisms (SCHULZE and BARBERI), 1881, A., 1061; 1882, A., 1195.

formation of, from uric acid in the animal body (SALKOWSKI), 1876, ii., 291.

synthesis of (GRIMAU), 1876, ii., 628. constitutional formula of (PONOMAREFF), 1879, A., 227.

- Allantoin**, oxidation of, with potassium ferricyanide (VAN EMBDEN), 1873, 1025.  
 synthesis of a homologue of (GRIMAU), 1875, 358.
- Allantoxidin** (PONOMAREFF), 1879, A., 227, 461.
- Allantoxanic acid** (VAN EMBDEN), 1873, 1025; (MULDER), 1876, i., 568; (PONOMAREFF), 1879, A., 226.
- Allanturic acid** (PONOMAREFF), 1879, A., 228, 461.
- Allene tetrachloride**. See Propane, tetrachloro-.
- Allo-**. See under parent substance.
- Allophanic, alloxanic and oxaluric acids**, relation between (SALOMON), 1874, 791.
- Allophite** from Langenbielan in Silesia (WEBSKY), 1874, 1066.
- Alloxan**, synthesis of (GRIMAU), 1879, A., 375.  
 reactions of (ENGEL), 1876, i., 943.
- Alloxantin**, synthesis of (GRIMAU), 1879, A., 375.
- Alloys** (RICHE), 1874, 776.  
 composition of ancient (FLIGHT), 1882, T., 134.  
 composition of, from Peruvian tombs at Ancon (Lima), (TERRELL), 1879, A., 409.  
 formation of, by pressure (SPRING), 1882, A., 921.  
 volume-changes in the formation of (KARMARSH), 1878, A., 367.  
 in contact with copper, electromotive and thermo-electric forces of some (SUNDELL), 1874, 766.  
 action of the electric current on fused (OBACH), 1876, ii., 37.  
 expansion and specific heat of fusible (SPRING), 1876, ii., 592.  
 having more than one melting point (WIEDEMANN), 1878, A., 466.  
 easily fusible, apparatus for determination of the melting points of (LIEBERMANN), 1882, A., 914.  
 method of imparting sonorousness to (SILLIMAN), 1878, A., 97.  
 behaviour of certain, under the action of the blowpipe (CHAPMAN), 1877, i., 489; ii., 216.  
 action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 54, 86.  
 used for gold coinage (PELIGOT), 1873, 1067.  
 used as stopping for teeth, composition of (BENDER), 1879, A., 1076.  
 Japanese (KALISCHER), 1875, 922.  
 of aluminium and gallium (LECOQ DE BOISBAUDRAN), 1878, A., 704.
- Alloys of antimony and lead** (DE JUSSEU), 1879, A., 889.  
 action of acids on (v. DER PLANITZ), 1875, 428; 1876, i., 45.  
 of bismuth and lead, spontaneous disintegration of (VOGEL), 1873, 603.  
 of bismuth, lead and tin (*L'Arcel's metal*), composition of (WIEDEMANN), 1878, A., 465.  
 of bismuth, lead and tin (*Rose's metal*), expansion and rate of cooling of (WIEDEMANN), 1878, A., 465.  
 of bismuth, cadmium, lead and tin (*Wood's metal*), composition of (WIEDEMANN), 1878, A., 465.  
 of cadmium, bismuth, lead and tin (*Wood's metal*), specific gravity of (KNECHT), 1880, A., 679.  
 of bismuth, cadmium, lead and tin (*Lipowitz's metal*), expansion and rate of cooling of (WIEDEMANN), 1878, A., 465.  
 of copper and nickel (DONATH), 1880, A., 771.  
 of copper and tin, estimation of the specific electrical resistance of (LODGE), 1880, A., 687.  
 analogy between the conductivity for heat and the induction balance effect of (ROBERTS-AUSTEN), 1880, A., 687.  
 of gold and mercury (KASANZEFF), 1878, A., 937.  
 of iridium and platinum (MATTHEY), 1879, A., 774; 1881, A., 793.  
 of lead and silver from Kongsberg, crystals of (BRÖGGER), 1881, A., 353.  
 of lead iodide with silver iodide, expansion-coefficients of (RODWELL), 1881, A., 495, 966.  
 of lead and tin, melting points of (GNEHM), 1875, 728.  
 behaviour of, with vinegar (WEBER), 1879, A., 990.  
 used for household vessels (KNAPP), 1876, ii., 448.  
 of manganese, lead, copper, zinc, and nickel, estimation of (RICHE), 1878, A., 750.  
 of rhodium with lead and zinc, action of acids on (DEBRAY), 1880, A., 706.  
 of zinc with iridium, ruthenium, and rhodium, action of acids on (DEBRAY), 1880, A., 707.  
 resembling silver (ucogen) (ANON.), 1876, i., 131.  
 new method of analysis of ordinary (KERN), 1875, 1053.

**Alloys**, analysis of, by means of the spectroscope (LOCKYER and ROBERTS-AUSTEN), 1874, 495.

analysis of, containing copper, zinc, and nickel (BAYLEY), 1879, A., 485.

estimation of antimony in (BARTLEY), 1876, i., 748; 1877, ii., 222.

See also under the various metals.

**Allyl chlorobromhydrins** (HENRY), 1874, 978.

**Allyl compounds**, constitution of (KEKULÉ and RINNE), 1873, 1017.

rational formulæ of (LINNEMANN), 1874, 566.

additive products of, with hypobromous acid (HENRY), 1874, 978.

additive products of, with hypochlorous acid (HENRY), 1874, 679; 1875, 345.

**Allyl ether**. See Diallylic oxide.

**Allylacetic acid** (*pentenoic acid*) and its silver salt (FITTIG and MESSERSCHMIDT), 1882, A., 35.

synthesis of (REBOUL), 1877, ii., 593.

**Allylacetone**, preparation of (CROW), 1878, T., 53.

*o*-**Allylanisole** (PERKIN), 1878, T., 212; 1881, T., 435.

*p*-**Allylanisole**. See Anethoil.

**Allylbenzene** and its derivatives (RADZISZEWSKI), 1874, 798; (PERKIN), 1877, ii., 666.

attempts to prepare (WAGNER and TOLLENS), 1873, 1122; (FITTIG), 1874, 894; (BASWITZ and ARONHEIM), 1875, 1188.

formation of (RÜGHEIMER), 1874, 894.

*iso*-**Allylbenzene**, synthesis of (CHOLNACKI), 1873, 1029.

**Allyldipropyl**-. See Dipropylallyl-.

**Allylene**, formation of, from *citra*-bromopyrotartaric anhydride (BOURGOIN), 1878, A., 126.

produced by electrolysis of itaconic acid and its isomerides (AARLAND), 1873, 378.

conversion of, into mesitylene (SCHROHE), 1875, 625.

dichloride. See Propylene, 1:3-dichloro-.

tetrachloride. See Propane, tetrachloro-.

**Allylene, brom**-. See Propargyl bromide.

dichlor-, action of fuming nitric acid on (PINNER), 1876, i., 57.

conversion of, into acrylic acid (PINNER), 1874, 456.

**Allylenedigallein**. See Dihydroxy-methylcoumarin,

*iso*-**Allylenetetracarboxylic acid**. See Propanetetracarboxylic acid.

**Allylethyl**-. See Ethylallyl-.

**Allylic acetate**, action of hypochlorous acid on (HENRY), 1875, 346.

chlor-. (MARTINOFF), 1876, i., 541.

alcohol, occurrence of, in the products of the distillation of wood (ARONHEIM), 1875, 246.

physical properties of (THORPE), 1880, T., 210.

heat of combustion of (LUGNIN), 1881, A., 9.

action of chloral on (OGIALORO-TODARO), 1875, 878.

action of hypochlorous acid on (HENRY), 1875, 346.

action of iodine and aluminium, and of aluminium iodide on (GLADSTONE and TRIBE), 1881, T., 9.

action of zinc and sulphuric acid on (LINNEMANN), 1874, 1157; 1875, 355.

combination of, with barium oxide (VINCENT and DELACHANAL), 1880, A., 794.

black residue obtained in the preparation of, from glycerol (DA SILVA), 1881, A., 1122.

homologue of (CROW), 1878, T., 54.

aluminium salt of (GLADSTONE and TRIBE), 1881, T., 9.

brom- (HENRY), 1881, A., 567.

dibrom-, action of ethylic chloroformate on, in presence of sodium amalgam (KELLY), 1879, A., 305.

$\beta$ -chlor- (VAN ROMBURGH), 1882, A., 376.

iod- (HÜBNER and LELLMANN), 1880, A., 538; 1881, A., 242.

borate (COUNCLER), 1876, ii., 394.

action of zinc ethide on (COUNCLER), 1879, A., 621.

bromide, preparation of (GROSHEINTZ), 1878, A., 963.

action of hypochlorous acid on (HENRY), 1875, 345.

action of, on silver nitrite (SCHIFF), 1875, 51.

$\alpha$ -brom-. See Propylene, 1:2-dibromo-.

bromodichloride (SIMPSON), 1880, A., 456.

chloride, action of hypochlorous acid on (V. GEGERFELT), 1873, 1123; (HENRY), 1875, 346.

$\alpha$ -chlor-. See Propylene, 1:2-dichloro-.

tetrachloride,  $\beta$ -chlor- (VAN ROMBURGH), 1882, A., 376.



- Allylic chlorodibromide** (SIMPSON), 1880, A., 456.  
*aa-dichloropropionate* (BECKURTS and OTTO), 1877, ii., 181.  
 cyanide. See Crotonitrile.  
 cyanofornate (WAGNER and TOLLENS), 1873, 381.  
 ether. See Diallylic oxide.  
 iodide (HENRY), 1881, A., 567.  
   preparation of (KANONNIKOFF and SAYTZEFF), 1877, ii., 730, 874.  
   action of the copper-zinc couple on (GLADSTONE and TRIBE), 1874, 208.  
   action of mercuric ethide and phenylide on (SUIDA), 1882, A., 409.  
   action of, on potassium thiocyanate (BILLETER), 1876, ii., 184.  
   action of water on (NIEDERIST), 1879, A., 700.  
   nitrite (BRACKEBUSCH), 1874, 573.  
   santonate, rotatory power of (CARNELUTTI and NASINI), 1881, A., 181.  
   thiocyanate (GERLICH), 1875, 1019.  
   action of aldehyde-ammonia on (SCHIFF), 1877, i., 313.
- Allylidenic chloride** (1:1-dichloropropylene) (VAN ROMBURGH), 1882, A., 376.  
*tetrachloride*. See Propane, *tetrachloro*.
- Allylmalonic acid** (CONRAD and BISCHOFF), 1880, A., 628.  
   action of bromine on (HJELT), 1882, A., 947.
- Allylmethyl**-. See Methylallyl-.
- Allylphenyl**-. See Phenylallyl-.
- Allylthioacetanilide**, boiling point of (WALLACH and BLEIBTRET), 1879, A., 786.
- Allylthiocarbamide** (*thiosinamine*) (SCHIFF), 1877, i., 314; (PIESSE and STANSELL), 1881, A., 207.
- Allylthiocarbimide** (*oil of mustard*), formation of (SCHMIDT), 1877, ii., 309.  
   action of, on milk (SCHWALBE), 1873, 76.  
   testing of (HAGER), 1874, 1088; (FLÜCKIGER), 1881, A., 125.  
   detection of carbon disulphide in (LUCK), 1873, 1054.
- Allylthiohydantoins**, synthesis of (ANDREASCH), 1882, A., 408.
- Almandine** (HEBENSTREET), 1878, A., 209.  
   conversion of, into chlorite and serpentine (v. HAUSHOFER), 1874, 27.
- Almond oil**, bitter. See Oils, vegetable.
- Almond water**, bitter, estimation of hydrocyanic acid in (KOSTER), 1874, 94.
- Almonds**, gummy degeneration of (VULPIUS), 1878, A., 904.  
   microzymes of sweet, as producers of diastase and synaptase (BÉCHAMP), 1877, i., 106.
- Alnein** (SAVIGNY and COLLINEAU), 1882, A., 309.
- Aloes** (CRAIG), 1875, 1272.  
   dyeing with (PRESTON), 1877, ii., 378.  
   reactions of (LENZ), 1882, A., 1239.  
   Bornträger's test for (GROYES), 1881, A., 946.  
   and analogous bitters, detection of (BACH), 1874, 923.
- Aloin or aloins**, some experiments on (TILDEN), 1875, 1270; 1877, ii., 903.  
   from Barbadoes aloes (SCHMIDT and LIEBELT), 1876, ii., 641.  
   formation of, in Socotrin aloes when exposed to the air (TRÉCUL), 1873, 84.  
   oxidation-products of the (TILDEN), 1877, ii., 264.
- Aloric acid** (WESELSKY), 1873, 1039.
- Alpinin** (JAHNS), 1882, A., 209, 866.
- Alshedite** (BLUMSTRAND), 1880, A., 15.
- Alsine media**, examination of (SACC), 1882, A., 990.
- Alstonamine** (HESSE), 1879, A., 71.
- Alstonia constricta*, alkaloids of (HESSE), 1879, A., 269, 332; 1881, A., 623; (OBERLIN and SCHLAGDENHAUFFEN), 1880, A., 127.
- Alstonia scholaris*. See Dita bark.
- Alstonia spectabilis*, alkaloids of (HESSE), 1881, A., 447.
- Alstonicine** (OBERLIN and SCHLAGDENHAUFFEN), 1880, A., 128.
- Alstonidine** (HESSE), 1881, A., 624.
- Alstonine** (*chlorogenine*) (v. MUELLER and RUMMEL), 1879, T., 31; (OBERLIN and SCHLAGDENHAUFFEN), 1880, A., 127; (HESSE), 1881, A., 623.
- Altaite** (BURKART), 1874, 32; (GENTH), 1875, 430.
- Alum or alums**, manufacture of, under pressure (FAUDEL), 1876, ii., 225.  
   preparation of (ZIMMERMANN), 1877, i., 353.  
   formulae of (LUPTON), 1875, 201.  
   molecular volumes of (PETTERSSON), 1874, 760; 1882, A., 1259.  
   expansion of (SPRING), 1882, A., 1020.  
   cubic (POLIS), 1880, A., 441.  
   crystallisation of (LOIR), 1881, A., 878.

**Alum** or **alums**, growth of crystals of, in presence of another salt (v. FOULLON), 1882, A., 574.  
 crystals, sensitiveness of, to variations in the strength of their mother liquors (KLOCKE), 1880, A., 529.  
 microscopical observations on the growth and resolutions of, in solutions of isomorphous substances (KLOCKE), 1880, A., 855.  
 crystalline dissociation of (FAVRE and VALSON), 1873, 32.  
 reddish-white (SINGER), 1881, A., 369.  
 containing aniline and rosaniline, attempts to prepare (WOOD), 1878, A., 723.  
 behaviour of, towards the chromates of potassium and barium (FLEISCHER), 1873, 1005.  
 effect of, on bread (MOTT), 1879, A., 1077.  
 solutions, decomposition of, at 100° (NAUMANN), 1876, i., 682.  
 supersaturated (THOMSON and BLOXAM), 1882, T., 382.  
 "etch-figures" produced on (KLOCKE), 1879, A., 439.  
 mordanting woollens with (HAVREZ), 1873, 206.  
 precipitation of, by sodium carbonate (MILLS and BARR), 1882, T., 341.  
 logwood test for (STODDART), 1879, A., 483.  
 detection and estimation of, in bread and flour (DUPRÉ), 1874, 916; 1878, A., 915; 1879, A., 483; (CLEAVER), 1874, 1101; (THRESH), 1876, i., 109; (WANKLYN), 1877, i., 231; (BELL), 1877, ii., 510; (YOUNG), 1877, ii., 510; 1879, A., 483; (WELBORN), 1878, A., 1009; (PENNEY), 1879, A., 556.  
 estimation of, in wine (LOUVER), 1882, A., 96.  
**Alumina.** See Aluminium oxide.  
**Alumina-soap** as a lake (ANON.), 1873, 960.  
**Aluminite** (FISCHER), 1881, A., 991.  
 occurrence of, near Halle (LASPEYRES), 1873, 853.  
 from Kuchelbad (ŠTOLBA), 1874, 966.  
 from Mühlhausen, near Kralup, in Bohemia (RAFFELT), 1881, A., 691.  
**Aluminium**, occurrence of, in certain cryptogams (CHURCH), 1875, 283.  
 atomic weight of (MALLET), 1880, A., 701; 1882, A., 279.  
 new determination of the equivalent of (TERREIL), 1879, A., 692.

**Aluminium** (metal) in zinc (WITTSTEIN), 1877, ii., 707.  
 spectrum of the vapour of (LIVING and DEWAR), 1881, A., 957.  
 electro-chemical deposition of (BERTRAND), 1877, i., 161.  
 voltaic polarisation of (v. BEETZ), 1876, ii., 267.  
 electro-chemical action of (DUCRETET), 1876, ii., 46; (v. BEETZ), 1878, A., 2.  
 decomposition of water by the joint action of, and of aluminium iodide, bromide or chloride, with some instances of reverse action (GLADSTONE and TRIBE), 1875, 322.  
 gases occluded in (DUMAS), 1881, A., 350.  
 action of, on cupric chloride (TOMMASI), 1882, A., 1266.  
 action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 84.  
 action of, on aqueous sodium hydroxide (MILLS), 1880, T., 456.  
 action of, on sodium carbonate at a high temperature (MALLET), 1876, ii., 349.  
 action of, on zinc chloride (FLAWITZKY), 1873, 848.  
 resistance of, to atmospheric and other action (WINKLER), 1877, ii., 945.  
 amalgamation of (CASAMAJOR), 1878, A., 474.  
 oxidation of (JEHN and HINZE), 1875, 1001; (HINZE), 1878, A., 471.  
**Aluminium alloys** with gallium (LECOQ DE BOISBAUDRAN), 1878, A., 704.  
**Aluminium salts**, thermochemistry of (BERTHELOT), 1878, A., 548.  
 influence of, on vegetation (BERGSTRAND), 1876, ii., 539.  
**Aluminium bromide**, reactions due to the presence of (GUSTAVSON), 1877, ii., 599; 1878, A., 972; 1879, A., 142; 1880, A., 370; 1881, A., 398.  
 compounds of cymene with (GUSTAVSON), 1879, A., 785.  
 chloride, anhydrous, new method of producing (CURIE), 1874, 336.  
 heat of formation and of solution of (THOMSEN), 1876, i., 29.  
 action of acetic and sulphurous anhydrides on (ADRIANOWSKY), 1879, A., 620, 915.  
 decompositions produced by the action of, on organic compounds (FRIEDEL and CRAFTS), 1882, T., 115.

- Aluminium chloride**, reactions due to the presence of (GUSTAVSON), 1879, A., 785; 1880, A., 370; 1881, A., 398.  
 compounds of, with benzene and toluene (GUSTAVSON), 1879, A., 308, 461.  
 compounds of, with cymene (GUSTAVSON), 1879, A., 785.  
**palladium chloride** (WELKOW), 1874, 1065.  
**platinochloride** (WELKOW), 1874, 657.  
 hydrate, isomeric modification of (TOMMASI), 1880, A., 849.  
 heats of decomposition, formation and neutralisation of (THOMSEN), 1876, i., 29.  
 hydrates, dehydration of, by the time method (RAMSAY), 1877, ii., 395.  
 rehydration of (CROSS), 1879, T., 798.  
 iodide, preparation of (GUSTAVSON), 1882, A., 364.  
 action of, on glycerol (HODGKINSON), 1877, ii., 300.  
 action of, on various organic compounds containing chlorine (GUSTAVSON), 1878, A., 211.  
 reaction with (GLADSTONE and TRIBE), 1880, A., 861.  
 nitride and the action of metallic aluminium upon sodium carbonate at a high temperature (MALLET), 1876, ii., 349.  
 oxide (*alumina*), preparation of (G. and F. LÖWIG), 1879, A., 490.  
 interesting formation of (JEHN), 1876, i., 189.  
 action of ammonium carbonate on (BARTH), 1880, A., 791.  
 action of, on potassium carbonate (MILLS and PRATT), 1879, T., 336.  
 action of sulphuretted hydrogen on alkaline solutions of (LÖSEKANN), 1879, A., 437.  
 fixation of, as a discharge on indigo-blue by means of aluminium chloride (SAGET), 1882, A., 676.  
 compound of, with carbonic acid (URBAIN and RENOUL), 1879, A., 885.  
 estimation of. See Aluminium, estimation of.  
 phosphates (MILLOT), 1875, 735; 1876, i., 880; (ERLENMEYER), 1879, A., 203; (DE KONINCK and THIÉRIART), 1881, A., 465.  
 and iron phosphate, behaviour of, in tartaric and citric acid (WARINGTON), 1875, 993.
- Aluminium silicates**, chemical constitution and natural grouping of (BRAUNS), 1874, 1074.  
 synthetic production of (MEUNIER), 1881, A., 350.  
 lithium silicates (HAUTEFEUILLE), 1880, A., 447.  
 magnesium silicate accompanying corundum (LEEDS), 1874, 29.  
 sodium silicates formed by the action of sodium carbonate on kaolin (SILBER), 1881, A., 684.  
 sulphate, an (MARGUERITE-DELA-CHARLONNY), 1880, A., 792.  
 preparation of, for paper-making (RADEMACHER), 1878, A., 618.  
 improvements in the manufacture of (DUCLAUX), 1877, ii., 521; (CROLL), 1879, A., 423.  
 manufacture of, from blast-furnace slags (AMENC, CKIANDI, FABRE and MILIUS), 1877, ii., 239.  
 free from iron, production of, from aluminous mineral containing iron (KYNASTON), 1881, A., 666.  
 effect of, on sewage (GRAHAM), 1877, i., 355.  
 testing of (ANON.), 1873, 1162.  
 estimation of (ANON.), 1876, ii., 327; (MERZ), 1877, ii., 355.  
 sulphates (PICKERING), 1882, A., 698.  
 chromium, and iron, and manganese sesquisulphates (ETARD), 1879, A., 594.  
 sulphide (REICHEL), 1876, i., 43.  
 heat of formation of (SABATIER), 1880, A., 523.
- Aluminium organic compounds:—**  
**Aluminium alcohols** (GLADSTONE and TRIBE), 1880, A., 861, 862; 1881, T., 1; 1882, T., 5.  
 butyl (CAHOIRS), 1874, 349.  
 propyl (CAHOIRS), 1873, 366.
- Aluminium, detection, estimation and separation:—**  
 precipitation of, by borax<sup>1</sup> (JEHN), 1874, 775.  
 precipitation of, by sodium acetate (JUNGCK), 1877, i., 344.  
 spectroscopical reaction for (VOGEL), 1877, i., 742.  
 estimation of (v. REIS), 1881, A., 844.  
 estimation of, in presence of iron (MACIVOR), 1874, 916; (DONATH), 1881, A., 760.  
 estimation of, in iron and steel (BLAIR), 1877, ii., 802.  
 estimation of, in presence of phosphoric acid (PELLET), 1877, ii., 223.  
 estimation of, in phosphates (ESILMAN), 1874, 190.

**Aluminium, separation:—**

separation of, from iron (ILES), 1881, A., 645; (CLASSEN and V. REIS), 1881, A., 1082; (ANON.), 1882, A., 426.

separation of, from iron and chromium (CARNOT), 1881, A., 1081.

separation of, from manganese, zinc, cobalt and nickel (CLASSEN), 1879, A., 970, 1055.

separation of, from phosphoric acid (DEROME), 1880, A., 256.

separation of, from phosphoric acid and iron sesquioxide (FLIGHT), 1875, 592.

separation of, from vanadic acid (BETTENDORF), 1877, ii., 175, 922.

**Aluminium battery** (WÖHLER), 1880, A., 838.

**Aluminium gold-purple** (DEBRAY), 1873, 604.

**Aluminous chrysocolla** from Utah (SANTOS), 1877, ii., 854.

**Aluminous ores** of manganese, constitution of (LASPEYRES), 1876, ii., 175.

**Alum shale**, utilization of (RICH), 1874, 195.

**Alunite**, a new locality for (CREDNER), 1878, A., 477.

new mode of occurrence of (v. LASAULX), 1875, 618.

**Alunogen**. See Keramohalite.

**Amalgams**. See Mercury alloys.

**Amalic acid**, and its synthesis and deposition (MALY and HINTEREGGER), 1882, A., 629.

amidocyan- (ANDREASCH), 1882, A., 1056.

**Amaranthus salicifolius** and *A. caudatus*, colouring matter of (HILGER and BISCHOFF), 1879, A., 730.

**Amaric acid and anhydride** (ZININ), 1878, A., 152.

**Amarine** (RADZISZEWSKI), 1877, ii., 887; (CLAUS and ELBS), 1880, A., 881; (FISCHER and TROSCHKE), 1881, A., 51.

conversion of hydrobenzamide into (BORODIN), 1874, 273.

constitution of (JAPP and ROBINSON), 1882, T., 323; (RADZISZEWSKI), 1882, A., 1064.

dichromate (FISCHER and TROSCHKE), 1881, A., 51.

methiodide (CLAUS and ELBS), 1880, A., 881.

nitroso- (BORODIN), 1876, i., 269.

**Amatine**. See Neurine.

**Amazon-stone** (*microcline*) from Pike's Peak, Colorado (VOM RATH), 1879, A., 515.

**Amazon-stone** (*microcline*) of Pike's Peak, Colorado, zircon in the, and colouring matter of (KÖNIG), 1877, ii., 720.

**Amber**. See under Resin.

**Amblygonite** (*hebronite*; *montebrasite*) (v. KOBELL), 1873, 1113.

composition of (PENFIELD), 1880, A., 96, 520.

crystalline form and optical properties of (DES CLOIZEAUX), 1873, 481.

**Amesite**. See Cornindophilite.

**Amethyst** from Oberstein (v. LASAULX), 1876, ii., 489.

cause of the purple colour of (ROSS), 1882, A., 1269.

peculiar twin formation of (VOM RATH), 1874, 1074.

twins with the trigonal pyramid from Oberstein on the Nahe (LASPEYRES), 1875, 625.

**Amides and Amido-compounds** in green plants (KELLNER), 1879, A., 819; 1880, A., 279, 731.

in potatoes (SCHULZE and BARBIERI), 1878, A., 329.

action of acetic and benzoic chlorides on (KRETZSCHMAR and SALOMON), 1874, 790; (KRETZSCHMAR), 1875, 563; 1877, i., 614; (HÜBNER), 1878, A., 407.

action of alcoholates and phenates on (WEITH), 1873, 1240.

action of, on amidoazo-compounds (WITT), 1877, ii., 453.

action of bromine in alkaline solution on (v. HOFMANN), 1882, A., 822, 950, 1052.

action of carbon disulphide on (HLASIWETZ and KACHLER), 1873, 497.

action of chlorine on (STEINER), 1882, A., 1281.

action of chlorodinitrobenzene on (WILLGERODT), 1877, i., 90.

action of cyanogen iodide on (HÜBNER), 1876, ii., 310; 1878, A., 143.

action of, on phenols (GUARIESCHI), 1874, 261, 584.

action of phosphorus pentabromide on (WALLACH), 1877, i., 68.

action of phosphorus pentachloride on (WALLACH), 1875, 883; 1877, ii., 182; (WALLACH and HOFMANN), 1875, 1031; 1876, i., 604.

action of phosphorus pentasulphide on (BERNTSEN; v. HOFMANN), 1878, A., 585.

action of thiocarbonyl chloride on (RATHKE and SCHÄFER), 1874, 163.



- Amides and Amido-compounds**, formation of bases from (WALLACH and KAMENSKI), 1880, A., 547; (WALLACH), 1882, A., 958.  
 conversion of, into bromo-compounds (v. RICHTER), 1876, i., 390.  
 estimation of (KERN), 1880, A., 764.  
 estimation of, in plants (SCHULZE and BARBIERI), 1881, A., 313.  
 estimation of, in vegetable extracts (SCHULZE), 1882, A., 1006.  
 estimation of, by means of nitrous acid (SACHSSE and KORMANN), 1875, 784; (SCHULZE), 1877, ii., 917.  
 aromatic, direct formation of (SALKOWSKI), 1873, 638.  
 action of hydrochloric acid on (SCHULERUD), 1881, A., 42.  
 direct conversion of, into their corresponding azo-compounds (LEEDS), 1882, A., 47.  
 monobasic, preparation of (v. HOFMANN), 1882, A., 950.  
 substituted, action of nitrous acid on (FISCHER), 1877, ii., 607.  
 See also Amido-acids.
- Amidines** (WALLACH), 1876, i., 605; (LELLMANN), 1882, A., 1061.  
 from dibasic acids (WALLACH and KAMENSKI), 1881, A., 284.
- Amidoacetic acid**. See Glycocine.
- m-Amidoacetophenone** (HÜBNER; HUNNIUS), 1878, A., 147.
- p-Amidoacetophenone** (DREWSSEN), 1882, A., 847.
- Amido-acids** from acetophenone and anisaldehyde (TIEMANN), 1882, A., 57.  
 from cyanhydrins of benzaldehyde, acetone, and diethyl ketone (TIEMANN), 1882, A., 55, 57; (TIEMANN and FRIEDLÄNDER), 1882, A., 56.  
 from isohydroxyvaleric acid (DUVILLIER), 1881, A., 713.  
 aromatic (TIEMANN and FRIEDLÄNDER), 1880, A., 473.  
 containing alcoholradicles (GRIESS), 1873, 281, 1145.  
 substituted (BRÜHL), 1875, 1020; 1876, i., 698.  
 alkyl substituted (SCHIFF), 1882, A., 303.  
 reactions of (HOFMEISTER), 1878, A., 40, 42.  
 See also Amides.
- 4-(α-)Amidoalizarin**, preparation and dyeing properties of (PERKIN), 1876, ii., 580.
- 3-(β-)Amidoalizarin** (SCHUNCK and ROEMER), 1879, A., 654.
- Amidoisoamylbenzene** (*phenylamylamine*) (v. HOFMANN), 1874, 807; (CALM), 1882, A., 1284.  
 hydrochloride, action of sodium nitrite on (CALM), 1882, A., 1284.
- Amidoanisole**. See Anisidine.
- Amidoanthracene**. See Anthramine.
- Amidoanthraquinone**. See Anthraquinone, amido-.
- Amidoanthraquinonesulphonic acids** α- and β-, and their salts (CLAUS), 1882, A., 1105.
- Amidoazobenzene**. See Benzeneazobenzene under Azo.
- 2:4-diAmidoazobenzene**. See Chrysoidine.
- Amidobarbituric acid** (*murexan; uramil*) (REOCI), 1876, i., 569.  
 synthesis of (GRIMAU), 1879, A., 375, 460.  
 action of bromine on (MULDER), 1881, A., 801.
- Amidobenzanilide**. See Benzophenylenediamine.
- diAmidobenzanilide** (MAC HUGH), 1875, 271.
- Amidobenzene**. See Aniline.
- diAmidobenzene**. See Phenylenediamine.
- triAmidobenzene**, constitution of (SALKOWSKI), 1873, 280.  
 derivatives of (SALKOWSKI), 1878, A., 140.
- Amidobenzenes**, action of sulphuric acid on (POST), 1881, A., 91.
- Amidobenzenedisulphonic acid**. See Anilinedisulphonic acid.
- Amidobenzenephosphonic acid**. See Amidophosphenylic acid.
- Amidobenzenesulphonic acid**. See Anilinesulphonic acid.
- Amidobenzenyl-o-phenylenediamine**. See Benzenyltriamidobenzene.
- Amidobenzenyltolylenediamine**. See Benzenyltriamidotoluene.
- o-Amidobenzoic acid**. See Anthranilic acid.
- Amidobenzoic acids**, m- and p-. See Benzoic acid.
- o-Amidobenzonitrile** (HÜBNER), 1878, A., 140.
- m-Amidobenzonitrile** (HÜBNER and FRICKE), 1875, 272.
- Amidobenzophenone**. See Benzophenone, amido-.
- Amidobenzop-toluidide**. See Benzotolylene-3:4-diamine.
- diAmidobenzop-toluidide**. See Benzenyltriamidotoluene.
- m-Amidobenzoylactic acid** (LIEBERMANN), 1877, ii., 617.

- Amidobenzyllic cyanide. See Amido-phenylacetonitrile.
- Amido-*p*-benzylphenol (RENNIE), 1882, T., 221.
- Amidobenzylphenylamine. See Di-benzylphenylenediamine.
- Amidobromo-. See Bromamido-.
- Amidoisobutylbenzene and its derivatives (STUDER), 1881, A., 898; 1882, A., 176.
- $\beta$ -Amidobutyramide (BALBIANO), 1880, A., 461, 541.
- $\beta$ -Amidobutyranilide, hydrochloride of (BALBIANO), 1880, A., 462.
- $\beta$ -Amidobutyric acid (BALBIANO), 1880, A., 541.
- $\alpha$ -Amidoisobutyric acid, preparation of (URECH), 1873, 59.
- hydrochloride of (TIEMANN and FRIEDLÄNDER), 1882, A., 56.
- $\alpha$ -Amidoisobutyronitrile (TIEMANN and FRIEDLÄNDER), 1882, A., 56.
- Amidocamphor (SCHIFF), 1880, A., 891.
- Amidocarbimidamidodinitrophenol. See Guanidodinitrophenol.
- Amidocarbostyryl (*hydrasidocinnamic anhydride*) (FISCHER), 1881, A., 598.
- Amidochloro-. See Chloramido-.
- tetrAmidochrysazin (*hydrochrysamide*) (LIEBERMANN), 1877, i, 611.
- Amidochrysophanic acid (LIEBERMANN), 1877, i., 614.
- Amidocinnamic acid. See Cinnamic acid.
- Amidocitrotriarnide (KAEMMERER), 1875, 1178.
- Amido-compounds. See under Amides.
- Amido-*o*- and -*p* cresols (V. HOFMANN and V. MILLER), 1881, A., 593.
- m*-Amidocuminic acid, and some of its salts (V. LIPPMANN and LANGE), 1881, A., 276.
- two modifications of (PATERNO and FILETI), 1876, i., 595; (FILETI), 1881, A., 424.
- $\alpha$ -Amidocumylacetic acid (*cuminamid-acetic acid*) (PLÖCHL), 1882, A., 515.
- Amidocyanamalic acid (ANDREASCH), 1882, A., 1056.
- Amidodicyanobenzoyl (GRIESS), 1879, A., 321, 466.
- Amidodeoxybenzoin and its platinochloride (GOLUBEFF), 1879, A., 150, 790.
- Amidodiaz-. See under Azo-.
- diAmidodibenzylamine (STRAKOSCH), 1874, 78.
- di-*p*-Amidodi-*o*-carboxydiphenyl. See diAmidodiphenic acid.
- o*-Amidodiethyl-phenetol and -phenol (FÖRSTER), 1880, A., 461.
- diAmidodihydrindic acid (V. SOMMABUGA), 1879, A., 63.
- Amidodihydrocarbostyryl (GABRIEL and ZIMMERMANN), 1879, A., 640.
- diAmidodihydroxydiphenylsulphone (ANNAHEIM), 1874, 697.
- Amido-1:4-dimethoxybenzene (MAGGATTI), 1881, A., 595; (MÜHLHÄUSER), 1882, A., 302.
- 2:3-diAmido-1:4-dimethoxybenzene, hydrochloride of (KARLOF), 1881, A., 272.
- triAmidodimethoxytriphenylmethane (*leucanisidine*) (FISCHER), 1882, A., 834.
- Amidodimethylaniline. See Phenylenedimethyldiamine.
- Amidodimethylquinol. See Amidoxyl-quinol.
- diAmidodiphenetol. See Diethoxybenzidine.
- di-*m*-Amidodiphenic acid (SCHULTZ), 1878, A., 511; 1879, A., 538, 653; 1880, A., 814; (STRUVE), 1877, ii., 902; (HUMMEL), 1879, A., 165.
- Amidodiphenyl. See Diphenyl.
- oo*-diAmidodiphenyl. See  $\gamma$ -Benzidine.
- op*-diAmidodiphenyl. See Diphenylene.
- pp*-diAmidodiphenyl. See Benzidine.
- p*-Amidodiphenyl mono- and di-mercaptop (GABRIEL and DAMBERGIS), 1880, A., 891.
- di-*o*-Amidodiphenyl disulphide and its hydrochloride (V. HOFMANN), 1880, A., 386.
- pp*-diAmidodiphenylamine, and its salts (NIETZKI), 1878, A., 792.
- tetrAmidodiphenylamine (GNEHM and WYSS), 1878, A., 53.
- di-*o*-Amidodiphenyldiacetylene, and its derivatives (V. BAETTER and LANDSBERG), 1882, A., 623.
- diAmidodiphenylmethane (DOER), 1873, 170; (STAEDEL and PRAETORIUS), 1879, A., 319.
- diAmidodiphenylphthalide (V. BAETTER), 1880, A., 652.
- diAmido- $\beta$ -diphenylsuccinic acid (REIMER), 1882, A., 170.
- diAmidodiphenylsulphonedicarboxylic acid (MICHAEL and NORTON), 1877, ii., 619.
- p*-Amidodiphenyl-*p*-thioglycollic acid (GABRIEL and DAMBERGIS), 1880, A., 890.
- Amidoditolyl. See Ditolyl.
- diAmidoditolyl (*olidine*) compounds, isomeric, and their derivatives (GOLDSCHMIDT), 1879, A., 235; (MICHLER and DE SAMPAIO), 1882, A., 177; (MICHLER and PATTINSON), 1882, A., 199.

- di*Amidodi-*p*-tolylcarbamide, and its hydrochloride (PERKIN), 1880, T., 700.
- di*Amido-*s*-di-*o*-tolylhydrazine (*hydrazotoluidine*) (BUCKNER), 1878, A., 863.
- Amidoditolylidimidotoluene [m.p. 244°] (BARSILOWSKY), 1878, A., 300; 1879, A., 237; 1881, A., 432.
- $\beta$ -Amidoethoxynaphthalene (KOELLE), 1881, A., 178.
- 3:5-*di*Amido-*p*-ethoxytoluene (KAYSER), 1882, A., 1203.
- p*-Amidoethylbenzene (BENZ), 1882, A., 1284.
- o*-Amidethyl-phenetol and -phenol, and their salts (FÖRSTER), 1880, A., 463.
- di*Amidofluorene (SCHULTZ), 1879, A., 653; 1880, A., 814.
- Amidoglutaric acid. See Glutamic acid.
- Amidoglyoxylic acid, ammonium salt of (BÖTTINGER), 1879, A., 619; 1880, A., 621.
- Amido-groups, influence of, on the orientation of bromine or NO<sub>2</sub> in the benzene-nucleus (NEVILE and WINTHER), 1880, T., 429.
- influence of, on a sulphonic group entering the benzene molecule (POST), 1880, A., 238; 1881, A., 91.
- replacement of the carboxyl group by (LOSSEN), 1875, 769.
- o*-Amidohemipinic acid, barium salt of (PRINZ), 1882, A., 403.
- Amidohemipinic anhydride (*azo-opi-amic acid*) and its barium salt (PRINZ), 1882, A., 402.
- $\alpha$ -Amido-*n*-heptioic acid (HELMS), 1876, i., 374; (CAHOURS and DEMARÇAY), 1879, A., 1037.
- Amidohexioic acid, compounds of heptioic aldehyde with the sulphite of (*ozanthamidohexioic sulphite*) (SCHIFF), 1882, A., 304.
- (*amidodithylactic acid*) (TIEMANN and FRIEDLÄNDER), 1882, A., 56.
- $\alpha$ -Amido-*n*-hexoic acid. See Leucine.
- $\alpha$ -Amido-*n*-hexoic anhydride (DESTREM), 1878, A., 506.
- Amido-*n*- and -*iso*-hexonitrile (ERLENMEYER), 1882, A., 191.
- $\beta$ -Amidohydracrylic acid (*isoserin*) (ERLENMEYER), 1880, A., 713.
- Amidohydroxyanthraquinone (BOURCART), 1880, A., 263.
- 1-Amido-2-hydroxyanthraquinone (*alizarinamide*) (LIEBERMANN), 1877, i., 612.
- 2-Amido-1-hydroxyanthraquinone (*alizarinamide*) (v. PERGER), 1879, A., 253.
- Amidohydroxyanthraquinonesulphonic acids (v. PERGER), 1879, A., 255.
- 3-Amido-2-hydroxy- $\alpha$ -naphthaquinone (*amidonaphthalic acid*) (DIEHL and MERZ), 1878, A., 888.
- Amidodilimido- $\alpha$ -naphthol, and chromate and hydrochloride of (DIEHL and MERZ), 1879, A., 251.
- Amidodilimido-*o*-rcinol (STENHOUSE), 1873, 752.
- Amidodilimidoresorcinol (DIEHL and MERZ), 1878, A., 875.
- di*Amidoindigo (v. BAEYER), 1879, A., 939.
- Amidolactic acid. See Lactic acid.
- Amidomaleic acid (CLAUS and VOELLER), 1881, A., 254.
- Amidomalonalamide (CONRAD and GUTH-ZEIT), 1882, A., 947.
- Amidomesitylene. See Mesidine.
- di*Amidomesitylene (LADENBURG), 1876, i., 385.
- Amidomesitylenic acids, *o*- and *p*-, and their salts (SCHMITZ), 1879, A., 156.
- Amidomethenylamidophenyl mercaptan (v. HOFMANN), 1879, A., 806.
- 6-Amido-5-methyl-2:4-diethyl-*m*-diazine. See Cyanethine.
- Amido-*p*-methylidiphenyl (CARNELLEY), 1876, i., 21.
- Amidomethyleneprocatechol hydrochloride (HESSE), 1880, A., 248.
- Amidonaphthalene. See Naphthylamine.
- di*Amidonaphthalene. See Naphthylenediamine.
- Amidonaphthol. See Naphthol.
- 2:4-*di*Amido- $\alpha$ -naphthol-2'-sulphonic acid (LAUTERBACH), 1882, A., 64.
- 1-Amido- $\beta$ -naphthol-3'-sulphonic acid (MELDOLA), 1881, T., 47.
- Amido-octoic acid. See Octoic acid.
- tri*Amido-*o*-rcinol (STENHOUSE), 1873, 752.
- p*-Amidooxindole (GABRIEL and MEYER), 1881, A., 731.
- hex*Amido-oxymufluorescein hydrochloride (SCHWARZ), 1880, A., 552.
- Amidophenanthrene,  $\alpha$ -,  $\beta$ - and  $\gamma$ - (SCHMIDT), 1879, A., 941.
- o*-Amidophenetol (GROLL), 1876, i., 247.
- preparation of (FÖRSTER), 1880, A., 463.
- Amidophenol. See Phenol.
- p*-Amidophenoldisulphonic acid, and its derivatives (LIMPRICHT), 1882, A., 1075.
- Amidophenolsulphonic acids. See Phenolsulphonic acids.
- Amidophenyl mercaptan. See Phenyl mercaptan.
- 4-Amidophenylacetic acid (BEDSON), 1880, T., 92.
- p*-Amidophenylacetoneitrile and its derivatives (GABRIEL), 1882, A., 1070.

- o*-Amidophenylacetylene, and its derivatives (V. BAEYER and LANDSBERG), 1882, A., 623; (MÜLLER), 1882, A., 844.
- "*o*-Amidophenylbenzoic acid, internal anhydride of" (SUIDA), 1880, A., 246.
- tri-p*-Amidophenylditolylmethane ("dithotholucaniline") and its salts (FISCHER), 1882, A., 833.
- Amidophenylethane. See Phenylethane.
- m*-Amidophenylglyoxylic acid and amide (*m*-isatic acid and amide) (CLAISEN and THOMPSON), 1880, A., 253.
- p*-*di*Amidophenylic sulphide. See Aniline, thio-.
- Amido- $\beta$ -phenyl- $\alpha$ -lactic acid (DEWAR), 1881, A., 1044.
- p*-Amido-2'-phenyl-4'-methylquinoline. See Flavaniine.
- m*-Amidophenylloxamic acid (KLUSEMANN), 1875, 269.
- p*-Amidophenylphenyl mono- and di-mercaptan, hydrochloride of (GABRIEL and DAMBERG), 1880, A., 891.
- Amidophenylpropionic acid. See Phenylpropionic acid.
- Amidophenylthiocarbimide (V. HOFMANN), 1880, A., 388.
- o*-Amidophenylurethane. See Ethylic *o*-amidophenylcarbamate.
- 3-Amidophthalic acid (V. BAEYER, BÜHRIG and KOENIGS), 1877, ii., 336.
- di*Amidoisophthalophenone,  $\alpha$ - and  $\beta$ - (ADOR), 1880, A., 471.
- Amidophosphenylic acid (MICHAELIS and BENZINGER), 1876, ii., 203; 1878, A., 58.
- Amidopropionic acid. See Alanine.
- $\alpha$ -Amidopropionitrile (ERLENMEYER and PASSAVANT), 1880, A., 313.
- Amidopyrene and its sulphate and hydrochloride (GOLDSCHMIEDT), 1882, A., 206.
- Amidopyrocatechol (BENEDIKT), 1878, A., 575.
- Amidopyromeconic acid (OST), 1879, A., 709.
- 1-Amidoquinoline (BEDALL and FISCHER), 1882, A., 413.
- Amidoresacetophenone (NENCKI and SIEBER), 1881, A., 811.
- 5-Amidosalicylic acid and its sulphate (HÜBNER), 1879, A., 381.
- Amidostilbene, mono- and di- (STRAKOSCH), 1873, 890.
- p*-Amidostyrene, preparation of, from *p*-nitrocinnamic acid (BENDER), 1882, A., 201.
- 2:3-*di*Amidosuccinamide (CLAUS and HELPENSTEIN), 1881, A., 578.
- 2:3-*di*Amidosuccinic acid, and its alkali salts (CLAUS and HELPENSTEIN), 1881, A., 578; (LEHRFELD), 1882, A., 163; (LJUBAVIN), 1882, A., 828.
- Amidosuccinophenylimide (TAYLOR), 1876, i., 602.
- Amidosuccinuric acid (GUARESCHI), 1878, A., 138.
- Amido-*o*- and *p*-sulphobenzoic acids, *o*-, *m*- and *p*- (HART), 1881, A., 1144.
- Amidosulphonic acid, and its salts (BERGLUND), 1876, ii., 44; 1877, ii., 111; 1878, A., 643.
- Amidosulphonic acids (LIMPRICHT), 1875, 267.
- formation of, by the action of concentrated sulphuric acid (NEVILLE and WINTHER), 1880, T., 625.
- 5 Amidosulphosalicylic acid (HÜBNER), 1878, A., 150.
- tetr*Amidotetraphenyltetramidomethane (HÜBNER), 1878, A., 143.
- m*-Amidothiobenzamide, action of iodine on (WANSTRAT), 1873, 909.
- Amidotoluene. See Toluidine.
- di*Amidotoluene. See Tolylenediamine.
- tri*Amidotoluene hydrochloride and sulphate (RUEHMANN), 1882, A., 392.
- p*-Amidotolueneazoxy-*o*-toluidine (BUCKNEY), 1878, A., 863.
- Amido-*m*-toluic acid, transformation of, into chloro- and bromo-*m*-toluic acids (REMSEN and KUHARA), 1882, A., 607.
- Amidotolyl mercaptans (HESS), 1881, A., 596.
- Amidotolylbenzamidine (BERNTSEN and TROMPETTER), 1879, A., 147.
- o*-Amidotolylethane (*thyl-o*-amidotoluene) and its derivatives (BENZ), 1882, A., 1284.
- tri*Amidotribenzylamine (STRAKOSCH), 1874, 78.
- p*-*di*Amidotriphenylecarbinol (DOEBNER), 1882, A., 957.
- Amidotriphenylmethane. See Triphenylmethane.
- tri*Amidotriphenylmethane. See *para*-Leucaniline.
- Amidovaleric acid. See Valeric acid.
- Amidoveratric acid (TIEMANN and MATSMOTO), 1876, ii., 524.
- Amines, preparation and estimation of the, by the formation of their alums (KIRCHMANN), 1877, i., 620.
- action of, on dichloronaphthaquinone (PLAGEMANN), 1882, A., 973.
- action of ferro- and ferric-cyanic acids on (FISCHER), 1878, A., 407; (EISENBERG), 1880, A., 231; 1881, A., 261.



- Amines**, action of methylenic iodide on (LERMONTOFF), 1875, 145.  
 oxidation of (WALLACH and CLAISEN), 1876, i., 575.  
 ferrocyanides of the (FISCHER), 1878, A., 407; (WURSTER and ROSER), 1880, A., 98; (EISENBERG), 1880, A., 231; 1881, A., 261.
- Amines, aromatic** (MEYER and STÜBER), 1873, 507; (NÖLTING and BOASSON), 1877, ii., 885; (SPICA), 1880, A., 241.  
 preparation of, from phenols and alcohols (MERZ and WEITH), 1882, A., 179.  
 synthesis of, by intramolecular atomic interchange (v. HOFMANN), 1874, 807.  
 laws of substitution of (LANGER), 1882, A., 954, 1058.  
 condensation of, with aromatic acids (FISCHER), 1878, A., 51; 1879, A., 53; 1880, A., 39, 40, 636, 661; 1881, A., 587; 1882, A., 392, 833.  
 action of trichloroacetic chloride on (TOMMASI and MELDOLA), 1874, 313.  
 action of hydrochloric acid gas on (LAUTH), 1873, 910.  
 action of iodine chloride on (MICHAEL and NORTON), 1878, A., 406.  
 action of sulphonic chlorides on (MICHLER and MORO), 1879, A., 920; (MICHLER and MEYER), 1880, A., 108.  
 progress of oxidation in mixtures of (WITT), 1879, T., 357.  
 additive products of, and on a new method of preparing chlorinated anilines (WITT), 1876, i., 264.  
 aldehyde derivatives of (SCHIFF), 1878, A., 668; (LADENBURG), 1878, A., 669.  
 compounds of, with silver nitrate and sulphate (MIXTER), 1881, A., 1129.  
 dry distillation of the mucates of (LICHTENSTEIN), 1882, A., 178.  
 action of chloroacetic acid on the thiocyanates of the (JÄGER), 1877, ii., 873.
- Amines, aromatic, primary**, and aldehydes, products from (FISCHER), 1879, A., 53; 1880, A., 39; 1881, A., 589.
- Amines, aromatic, primary and secondary**, action of chlorides of alcohol radicles on (GIRARD), 1876, i., 263.
- Amines, aromatic, secondary**, formed by the action of liquid toluidine on aniline hydrochloride (GIRARD and WILLIEM), 1876, ii., 98.
- Amines, aromatic, tertiary**, action of diazo-compounds on (GRIESS), 1877, ii., 454.
- Amines, fatty**, action of bleaching powder on (TCHERNIAK), 1876, i., 913.  
 action of ethylic chloroformate on (SCHREINER), 1880, A., 311.  
 separation of (DUVILLIER and BUISINE), 1881, A., 1025.
- Amines, fatty, primary**, formation of, by the action of caustic alkalis on the products obtained by the action of bromine on amides (v. HOFMANN), 1882, A., 1053.
- Amines, fatty, secondary and tertiary**, of secondary alcohol-radicles, attempts to prepare (JAHN), 1882, A., 820.
- Amines, fatty, tertiary** (RUDNEFF), 1879, A., 713; 1880, A., 545.  
 formation of, by the synthesis of organic acids (SCHMIDT and SACHTLEBEN), 1878, A., 848.
- Amines, metallic**, behaviour of (SCHWARZENBACH), 1876, i., 341.
- Amines**. See also Alkaloids, Ammonium-bases, Bases and Diamines.
- Ammelide** (*melanurenic acid*) (GABRIEL), 1876, i., 378.
- Ammeline** nitrate, and argentic oxide (BYK), 1880, A., 311.  
 thio-, a new derivative of perthiocyanogen (PONOMAREFF), 1875, 1183.
- Ammi Visnaga**, active principle of (MUSTAPHA), 1879, A., 1041.
- Ammonia** in air and water (LEVY), 1880, A., 848.  
 quantity of, in air, at different heights (TRUCHOT), 1874, 223.  
 in beetroots (CHAMPION and PELLER), 1876, i., 420.  
 free, presence of, in cast steel (REGNARD), 1877, ii., 169.  
 presence of, in human saliva (HEYWARD), 1882, A., 78.  
 in plants (PELLET), 1880, A., 563; 1881, A., 116; 1882, A., 885.  
 quantities of, in the water of the Seine (BOUSSINGAULT), 1876, ii., 181.  
 in the urine in health and in disease (TIDY and WOODMAN), 1873, 516.  
 contained in the sea water and salt marshes around Montpellier (AUDOYNAUD), 1876, i., 356.  
 manufacture of (RICKMAN), 1879, A., 496.  
 manufacture of, from the nitrogen of the atmosphere and the hydrogen of water (RICKMAN and THOMPSON), 1880, A., 767.

- Ammonia**, removal of, from coal gas by a continuous process (HARCOURT and FISON), 1873, 1270.  
 separation of, from gas (ANON.), 1882, A., 1331.  
 synthesis of (DONKIN), 1873, 1002; (JOHNSON), 1881, T., 128.  
 experiments to prove that it is not synthetically produced by the combination of hydrogen and nitrogen in presence of spongy platinum (WRIGHT), 1881, T., 361.  
 spectrum of (HOFMANN), 1873, 340; (SCHÖNN), 1878, A., 693.  
 heat of formation of (BERTHELOT), 1880, A., 207; (THOMSEN), 1880, A., 603.  
 convenient apparatus for the liquefaction of (REYNOLDS), 1882, T., 259.  
 anhydrous liquefied, properties of (GORE), 1873, 473.  
 solution, specific gravity of (WACHSMUTH), 1876, ii., 477.  
 burning of, in oxygen, a lecture experiment (ROSENFELD), 1880, A., 846; 1882, A., 138, 690.  
 absorption of gaseous, by calcium sulphate (JENKINS), 1876, ii., 172.  
 amount of, absorbed by hydrochloric acid from the air (HEINRICH), 1882, A., 798.  
 absorption of, by saline solutions (RAOULT), 1874, 224, 1058.  
 distillation of, in presence of thiocyanates (ESILMAN), 1875, 783.  
 action of, on acetone (OECHSNER DE CONINCK and PAIST), 1874, 789; (SOKOLOFF and LATSCHINOFF), 1875, 353.  
 gaseous, action of, on ammonium nitrate (DIVERS), 1873, 598; (RAOULT), 1873, 1201; 1882, A., 800.  
 action of, on bismuth oxybromides and oxide (MUIR), 1877, i., 27.  
 action of boron hydride on (JONES and TAYLOR), 1881, T., 216.  
 action of carbonyl sulphide on aqueous (SCHMIDT), 1877, ii., 307.  
 action of, on chloroacetylbenzene (STAEDEL and RÜGHEIMER), 1876, ii., 297, 407; 1877, i., 459.  
 action of methylic bromide on (DUVILLIER and BRISINE), 1881, A., 1027.  
 action of, on phenylethylacetamide and on tolylchloracetamide (TOMMASI), 1874, 623.  
 action of phosgene on (FENTON), 1879, T., 793.  
 action of, on rosaniline (JACQUEMIN), 1876, ii., 100.
- Ammonia**, action of, on silver peroxide (BÖTTGER), 1874, 229.  
 action of, on sodium phosphate (DUNN), 1877, ii., 703.  
 action of, on sulphur (JONES), 1876, i., 648.  
 action of, on valeralkdehyde (LJUBAVIN), 1873, 626; 1874, 355.  
 absorption of, from the air, by the volcanic earth of the Solfatara of Puzznoli (DE LUCA), 1875, 779.  
 atmospheric, absorption of, by plants (MAYER), 1874, 385; 1875, 658; (SCHLÆSING), 1874, 999; 1882, A., 242.  
 absorption of, by the soil (ORTH), 1880, A., 737.  
 decomposition of, in plants (KELLNER), 1880, A., 731.  
 exchanges of, between soil, air, and water (SCHLÆSING), 1875, 419; 1876, i., 95, 518; ii., 44, 172, 319.  
 influence of, on snake bites (ANON.), 1876, i., 724.  
 a constant contaminant of sulphuric acid (STOREK), 1876, i., 879.  
 purification of gas by (GÖBEL), 1879, A., 986.  
 compounds of hydracids with (MAUMENÉ), 1880, A., 4.  
 compounds of hydrobromic and hydriodic acids with (TROOST), 1881, A., 972.  
 compounds of, with hydrogen chloride (TROOST), 1879, A., 502.  
 compound of, with mercury and palladium (WILM), 1880, A., 854.  
 new compounds of, with nitric and acetic acids (TROOST), 1882, A., 1162.  
 commercial, new impurity in (WITTSTEIN), 1875, 485.  
 test for tarry impurities in (KUPFFERSCHLÄGER), 1875, 1289.  
 colour reactions of (ENGEL), 1876, i., 943.  
 detection of (WITTSTEIN; MODDERMANN), 1874, 602.  
 estimation of (PIUGGARI), 1874, 187; (RÜDORFF), 1874, 289; (DUPRÉ), 1875, 917; (HOUZEAU), 1877, ii., 510.  
 estimation of, by distillation (KNUBLAUCH), 1882, A., 1230.  
 estimation of, by the Nessler test (HARVEY), 1873, 1161.  
 estimation of, by sodium hypobromite (HÖNIG), 1878, A., 914.  
 estimation of, in the air (SCHLÆSING), 1875, 663.

- Ammonia**, estimation of, in the air, and in rain-water of Montsouris (LÉVY), 1877, ii., 509; 1878, A., 243.  
 estimation of, for meteorological purposes (HOUEAU), 1877, ii., 510.  
 estimation of, in salts of ammonium (PELLET), 1877, i., 227.  
 estimation of, in coal-gas (HOUEAU), 1873, 409.  
 estimation of, in vegetable products (SCHULZE), 1878, A., 608.  
 estimation of free and albuminoid, in the stagnant waters of the Dublin streets and in the Liffey (STUDDERT), 1876, ii., 326.
- Ammonia aurin** (DALE and SCHORLEMMER), 1879, T., 151.
- Ammonia-liquors** from gas-works, investigation of (GERLACH), 1875, 195.
- Ammonia-resins** (HIRSCHSOHN), 1878, A., 158.
- Ammonia soda process.** See under Sodium.
- Ammonias, compound.** See Amines.
- Ammonio-cobalt compounds.** See Cobaltammonium under Cobalt.
- Ammonio-copper compounds.** See Cuprammonium under Copper.
- Ammonio-mercury compounds.** See Mercuammonium under Mercury.
- Ammonio-silver carbonate** (KERN), 1875, 1162.  
 iodide (LEA), 1878, A., 936.  
 oxide (PRESCOTT), 1880, A., 852.
- Ammonio-zinc oxide** (PRESCOTT), 1880, A., 852.
- Ammonium-alum**, decomposition of, by heat (MARGUERITE-DELACHARLONNY), 1880, A., 792.
- Ammonium iron alum**, dissociation of (THOMSON), 1879, T., 811.  
 See also Alums.
- Ammonium-amalgam**, composition of (ROUTLEDGE), 1873, 135.
- Ammonium salts**, a productive source of (TERNE), 1873, 1170.  
 heat of formation of (BERTHELOT), 1880, A., 523.  
 apparatus for showing the dissociation of (TOMMASI), 1881, A., 343.  
 dissociation of, in aqueous solutions (DIBBITS), 1873, 33; 1875, 608; 1876, i., 680.  
 dissociation of, in presence of metallic sulphides (DE CLERMONT and GRIGNON), 1877, ii., 829.  
 decomposition of, by potassium and sodium salts (DIBBITS), 1877, i., 490.  
 action of alkaline hypobromite on (FOSTER), 1878, T., 470.
- Ammonium salts**, behaviour of, to bone-black (BIRNBAUM and BOMASCH), 1876, i., 803.  
 action of calcium carbonate on (NIVET), 1880, A., 700.  
 physiological action of (LANGE), 1876, i., 723.  
 action of, on animals (RICHER and MOUTARD-MARTIN), 1882, A., 760.
- Ammonium bromide**, some properties of (EDER), 1881, A., 682.
- tribromide** (ROOZEBOOM), 1882, A., 139.
- carbonate** (MAUMENÉ), 1881, A., 414.  
 composition of commercial, and of the product formed on exposing it to the air (VOGLER), 1879, A., 354.  
 dissociation of (ENGEL and MOITESIER), 1882, A., 162.
- hydrogen carbonate**, solubility and dissociation of (DIBBITS), 1875, 421.
- uranium carbonate**, preparation of (BURCKER), 1878, A., 771.
- chloride** (*sal-ammoniac*) in gas-liquor (GASCH), 1874, 727.  
 preparation of, from the gas-liquor of bone-works (DIVIS), 1874, 727.  
 constitution of (MEYER and LEECO), 1875, 999.  
 dissociation of; a lecture experiment (BÖTTINGER), 1879, A., 196.  
 action of potassium nitrite on (TOMMASI), 1881, A., 788.  
 combination of, with the chlorides of potassium and sodium (CHEVREUL), 1877, ii., 839.  
 elimination of, in urine (v. VOIT), 1877, ii., 206; (FEDER), 1878, A., 237, 993; (SALKOWSKI), 1879, A., 830.  
 solution, standard, alteration of, when kept in the dark (LEEDS), 1879, A., 400.  
 separation of common salt and (GERLACH), 1877, ii., 238.
- palladium chloride** (WILM), 1880, A., 854.
- platinochloride**, action of potash on (v. MEYER), 1879, A., 373.
- platinosochloride** (THOMSEN), 1877, ii., 276.
- rhodium chloride** (WILM), 1881, A., 514.
- dichromate**, action of hydrofluoric acid on (VARENNE), 1881, A., 225.
- tri- and tetra-chromates** (WYRUBOFF), 1881, A., 352; 1882, A., 146.

**Ammonium ferrie chromates** (HENSEN), 1880, A., 10.  
 beryllium fluoride (MARIGNAC), 1874, 25.  
 tellurium fluoride (HÖGBOM), 1881, A., 223.  
 zirconium fluoride, isomorphism of, with potassium fluoroxysulfate, and with ammonium fluoroxysulfate and fluotitanate (BAKER), 1879, T., 762.  
 fluoroxysulfate, crystalline form of (BAKER), 1879, T., 767.  
 fluoroxysulfates (BAKER), 1878, T., 391.  
 hydrates, heat of formation of (BERTHELOT), 1873, 1096.  
 iodide, iodo- (SEAMON), 1882, A., 8.  
 triiodide (JOHNSON), 1878, T., 397.  
 copper thallium iodide (JÖRGENSEN), 1873, 476.  
 molybdate (KAEMMERER), 1873, 354; (CARRINGTON), 1876, i., 192.  
 solution of, in nitric acid (KERN), 1878, A., 375.  
 solution, preparation and use of (KUPFFERSCHLÄGER), 1882, A., 554.  
 as a test for alkaloids (BUCKINGHAM), 1874, 715.  
 sodium trimolybdate (MAURO), 1882, A., 468.  
 nitrate (PICKERING), 1879, A., 200.  
 produced by the action of moist phosphorus on air (LEEDS), 1879, A., 881; 1881, A., 506.  
 heat of solution of (TOLLINGER), 1876, ii., 40; 1877, i., 678.  
 decomposition of, by heat (BERTHELOT), 1877, ii., 840.  
 production of a high temperature by means of (BÖTTGER), 1879, A., 102.  
 action of the copper-zinc couple on (GLADSTONE and TRIBE), 1878, T., 150.  
 action of gaseous ammonia on (DIVERS), 1873, 598; (RAOULT), 1873, 1201; 1882, A., 800.  
 action of manganese dioxide on (GATEHOUSE), 1877, ii., 112.  
 lanthanum nitrate (MARIGNAC), 1874, 25.  
 nitrite (BERTHELOT), 1874, 961, 1058; (LEEDS), 1879, A., 881; (WRIGHT), 1881, T., 357.  
 production of (ZÖLLER and GRETE), 1878, A., 372.  
 formation of (v. LÖSECKE), 1879, A., 298.

**Ammonium nitrite**, supposed formation of, from water and nitrogen (WEITH and WEBER), 1875, 1000.  
 nitrosoferrothioferrate (ROSENBERG), 1880, A., 9.  
 phosphate (SESTINI), 1880, A., 104.  
 magnesium phosphate (MILLOT and MAQUENNE), 1875, 1160.  
 hypophosphite (RAMMELSBURG), 1873, 4.  
 selenate, action of heat on (CAMERON and DAVY), 1878, A., 933.  
 silicofluoride, isomorphism of, with potassium fluoroxysulfate (BAKER), 1879, T., 762.  
 silicomolybdate (PARMENTIER), 1881, A., 880; 1882, A., 762.  
 sulphate (SCHWEITZER), 1877, ii., 703.  
 production of, from nitrogenous waste (L'HÔTE), 1873, 1066.  
 purification of brown (ESILMAN), 1876, i., 445.  
 action of calcium sulphate on (DITTE), 1877, i., 440.  
 fertilizing action of (HEIDEN), 1879, A., 739.  
 containing thiocyanate, action of, on the growth of plants (KONL-RAUSCH), 1875, 179.  
 action of, in the cultivation of beet-root (LAGRANGE), 1875, 909.  
 separation of, from sodium sulphate (GERLACH), 1877, ii., 238.  
 sulphates (JOHNSON and CHITTENDEN), 1878, A., 373.  
 beryllium sulphate (ATTERBERG), 1873, 1004.  
 ferrous sulphate (CARO), 1873, 246.  
 hydrogen sulphates (SCHWEITZER), 1877, ii., 703; (JOHNSON and CHITTENDEN), 1878, A., 873.  
 magnesium sulphate, formation of, in gas purifying (GLASENAPP), 1878, A., 536.  
 pyrosulphate (JOHNSON and CHITTENDEN), 1878, A., 373.  
 sulphide, vapour-density of (SALET), 1878, A., 645.  
 dissociation of (ENGEL and MOITESIER), 1879, A., 879.  
 action of, on chloral hydrate (DAVY), 1875, 142.  
 disulphide, vapour density of (SAINT-CLAIRE DEVILLE), 1879, A., 880.  
 vapour-tension of (ISAMBERT), 1881, A., 673.  
 sulphides, basic (TROOST), 1879, A., 880.  
 heat of formation of (OGIER), 1880, A., 151; (SABATIER), 1880, A., 690.



- Ammonium sulphides**, vapour-density of (HORSTMANN), 1877, ii., 840.  
 action of copper on (HEYMANN), 1873, 1105.  
 sulphide group, detection of the phosphates and oxalates of calcium in (HILGER), 1875, 102.  
 hydrosulphide, vapour-tension of (ISAMBERT), 1882, A., 1021.  
 dissociation of (ENGEL and MOITSIER), 1879, A., 879, 880; 1882, A., 269; (ISAMBERT), 1879, A., 880.  
 sulphite, formation of (SCHEITZ), 1875, 421.  
 action of, on nitrobenzene (ROORDA SMIT), 1876, i., 391.  
 thiomolybdate as a test for alkaloids (NAGELVOORT), 1877, ii., 230.  
 peruranate (FAIRLEY), 1877, i., 134.  
 vanadate, practical application of (BÖTTGER), 1874, 727.  
 precipitated from alkali vanadates by ammonium chloride (GERLAND), 1877, ii., 802.
- Ammonium organic compounds**:—  
 borocitrates (SCHEIBE), 1881, A., 89.  
 carbamate (KRETZSCHMAR), 1874, 361; (DRECHSEL), 1878, A., 44.  
 vapour-tension of (ISAMBERT), 1882, A., 269.  
 action of hypochlorites or hypobromites on (FENTON), 1879, T., 12.  
 cyanide, heat of formation of (OGIER), 1880, A., 151.  
 vapour-tension of (ISAMBERT), 1882, A., 1021.  
 gold cyanide (LINDBORN), 1878, A., 131.  
 cadmium ferrieyanide (WYRUBOFF), 1877, ii., 869.  
 lead ferrieyanide (SCHULER), 1879, A., 703.  
 oxyammonium platinoeyanide (SCHOLZ), 1881, A., 708.  
 selenocyanates (CAMERON and DAVY), 1881, A., 1100.  
 thiocyanate, extraction of, from gas liquors (ANON.), 1880, A., 358.  
 decomposition of, at a high temperature (CLAUS), 1876, i., 571.  
 oxidation of (SCHLAGDENHAUFFEN and WURTZ), 1878, A., 36.  
 action of acetic anhydride on (NENCKI and LEPLER), 1873, 1224.  
 action of chloral hydrate on (NENCKI and SCHAFFER), 1879, A., 306.  
 action of ethylic chloroformate on (DELITSCH), 1875, 358.
- Ammonium organic compounds**:—  
 thiocyanate, use of, in volumetric analysis (VOLHARD), 1878, A., 743.  
 mercury, silver, and zinc thiocyanates (FLEISCHER), 1876, i., 910.
- Ammonium bases** (LOSSEN), 1876, ii., 629; (MEYER), 1877, ii., 190; (LADENBURG), 1877, ii., 570, 754; (LADENBURG and STRUVE), 1877, ii., 838.  
 constitution of (LOSSEN), 1875, 607; (MEYER and LECCO), 1875, 633; 1876, i., 381.  
 action of heat on (v. HOFMANN), 1881, A., 570, 621, 745.  
 platinum salt containing (HEINTZ), 1877, i., 592.  
 See also Amines.
- Amorphous bodies**, application of the principle of dissimilar molecules to the gradual crystallisation of (PFAUNDLER), 1877, i., 435.
- Amphibia**, relation between tissue-metamorphosis and body-temperature in (SCHULZ), 1877, i., 327.
- Amphibole**. See Hornblende.
- Amphibole-andesite** (OEBBEKE), 1882, A., 1034.
- Amphigene**. See Lentic.
- Amydecylenic acid**. See Decenoic acid.
- Amygdalic tropeine**. See Homatropine under Alkaloids.
- Amygdalin**, electrolysis of (COPPOLA), 1878, A., 678.
- Amyl glycol**. See Dihydroxypentane.
- Amylaceous substances**, saccharification of (BONDONNEAU), 1876, i., 365.
- Amylamine** (TÖNNIES), 1879, A., 517.  
 chloride, physiological action of (DUJARDIN-BEAUMETZ), 1874, 174.
- n-Amylamine** (v. HOFMANN), 1882, A., 1054.
- isoAmylamines**, active and inactive, and some of their salts (PLIMPTON), 1881, T., 331; A., 33.
- tert.-Amylamine** (*dimethylethylcarbamine*) (WALITZKY), 1879, A., 135; (RUDNEFF), 1879, A., 141; 1880, A., 546.
- α- and β-Amylan**: constituents of some cereals (O'SULLIVAN), 1882, T., 24.
- Paramylan** (GREENISH), 1882, A., 1044.
- Amylanhydrobenzo $\delta$ amidobenzene iodide**. See *isoAmylbenzenyl-o-phenylenediamine iodide*.
- isoAmylanthracene** and its derivatives (LIEBERMANN and TOBIAS), 1881, A., 736; 1882, A., 862.

- isoAmylbenzene*, amido- (*phenylisoomylamine*) (V. Hofmann), 1874, 807; (CALM), 1882, A., 1284.  
hydrochloride, action of sodium nitrite on (CALM), 1882, A., 1284.
- tert.-Amylbenzene* (ESSNER), 1882, A., 46.
- isoAmylbenzenyl-o-phenylenediamine iodide* (*amylanthydrobenzodiamidobenzen iodide*) (HÜBNER), 1882, A., 505.
- isoAmyl-brom- and -chlor-anthracene* (LIEBERMANN and TOBIAS), 1881, A., 736.
- Amylacaproylcarbamide.** See Hexoamylcarbamide.
- isoAmylcarbamide* (CUSTER), 1879, A., 913.
- isoAmylchrysin* (PICCARD), 1877, ii., 342.
- isoAmylcinchonidine* and its platinum-chloride (CLAUS and WELLER), 1882, A., 228.
- isoAmyldihydroanthracene* (LIEBERMANN and LANDSHOFF), 1881, A., 609; 1882, A., 861; (LIEBERMANN and TOBIAS), 1881, A., 736.
- isoAmyldihydroanthranol* (LIEBERMANN and TOBIAS), 1881, A., 737; 1882, A., 862.
- Amylene** (*pentene*), polymerisation of (LEBEDEFF), 1876, i., 894.  
polymerides of, heat of formation of (BERTHELOT), 1876, i., 872.  
action of gaseous hydrochloric acid on (YOUNG), 1881, T., 490.  
bromide (FLAWITZKY and KRILOFF), 1878, A., 20; (WINOGRADOFF), 1878, A., 484.  
action of water on (NIEDERIST), 1879, A., 700.  
action of the copper-zinc couple on (GLADSTONE and TRIBE), 1874, 409.  
hydriodide (WINOGRADOFF), 1878, A., 484.
- Amylene**, brom- (FITTIG), 1880, A., 376.  
action of sulphuric acid on (BOUCHARDAT), 1881, A., 1114.  
nit-, preparation and properties of (HAITINGER), 1881, A., 1115.
- $\beta$ -Amylene** (*s-methylcyclohexylene*) (FITTIG), 1880, A., 376.  
dibromide from diethylcarbinol (WAGNER and SATTZEFF), 1876, i., 547.
- $\gamma$ -Amylene** (*as-methylcyclohexylene*) (WISCHNEGRADSKY), 1877, ii., 286.
- isoAmylene*, preparation of (ETARD), 1878, A., 392.
- isoAmylene*, heat of vaporisation of (BERTHELOT), 1879, A., 874.  
action of nitrosyl chloride on (TÖNNIES), 1879, A., 517.  
action of sulphuric acid on (OSSIPOFF), 1875, 877; 1876, i., 544.  
conversion of, into an amylic alcohol by sulphuric acid (FLAWITZKY), 1873, 369.  
transformation of, into eymene and hydrocarbons of the benzene series (BOUCHARDAT), 1880, A., 710.
- $\alpha$ -isoAmylene** (*isopropylethylene*) (WISCHNEGRADSKY), 1877, ii., 286; 1878, A., 394; (FLAWITZKY), 1879, A., 37.  
from fermentation amylic alcohol, constitution of (ELTEKOFF), 1878, A., 126.  
constitution of (FLAWITZKY), 1877, ii., 286.
- Amylenes**, isomeric (FLAWITZKY), 1873, 1013; 1874, 138; 1876, i., 545; 1877, ii., 420; (WISCHNEGRADSKY), 1877, ii., 420; 1878, A., 393, 717.  
action of oxidising agents on (ZEIDLER), 1877, ii., 421; (F. and O. ZEIDLER), 1879, A., 908.
- isoAmyleneanthrone chloride* (LIEBERMANN and LANDSHOFF), 1881, A., 609; 1882, A., 862.
- Amyleneguanamine** (V. BANDROWSKI), 1876, ii., 191.
- Amylethylene.** See Heptylene.
- isoAmyleugenol* (CANOURS), 1877, i., 462.
- isoAmylgyoxaline* (WALLACH), 1882, A., 821.
- "Amylic acid, thio-," from the mother liquors of corallin (COMMAILLE), 1873, 278.
- isoAmylic alcohol* (*fermentation*), specific heat and latent heat of evaporation of (DIKONOFF), 1882, A., 355.  
heat of combustion of (LUGININ), 1880, A., 787.  
action of bleaching powder on (REGNAULT and HARDY), 1880, A., 456; (GOLDBERG), 1882, A., 30.  
aluminium salt of (GLADSTONE and TRIBE), 1881, T., 7.  
isomerism of the amylenes from (OSSIPOFF), 1876, i., 545.  
action of the principal derivatives of, on polarised light (PIERRE and PUCHOT), 1873, 1017.  
detection of, in presence of ethylic alcohol (BETTELLI), 1875, 785.  
See also Fusel oil.

- Amylic alcohol**, active (*methylethylcarbinol*) (BAKHOVEN), 1874, 139; (LE BEL), 1874, 139; 1876, ii., 64; 1879, A., 369.
- Amylic alcohol**, active and inactive (POPOFF), 1873, 1017.
- Amylic alcohol**, inactive fermentation (BALBIANO), 1877, i., 292.
- action of sodium hydroxide on (BALBIANO), 1877, i., 449.
- Amylic alcohol** (*diethylcarbinol*), preparation of (WAGNER and SAYTZEFF), 1875, 627.
- amylene dibromide and amyl glycol from (WAGNER and SAYTZEFF), 1876, i., 547.
- sec.*-**Amylic alcohol** (*methylpropylcarbinol*) (WAGNER and SAYTZEFF), 1876, i., 547.
- synthesis of (LE BEL), 1879, A., 1029.
- sec.*-**isoAmylic alcohol** (*methylisopropylcarbinol*) (OSSIPPOFF), 1875, 877; 1876, i., 544; (WISCHNEGRADSKY), 1878, A., 393; (WINOGRADOFF), 1878, A., 484; (BOGMOLETZ), 1881, A., 401.
- tert.*-**Amylic alcohol** (*dimethylethylcarbinol*) (FLAWITZKY), 1873, 45; (OSSIPPOFF), 1876, i., 544; (WISCHNEGRADSKY), 1878, A., 393.
- conversion of *iso*amylene into, by sulphuric acid (FLAWITZKY), 1873, 369.
- specific heat and latent heat of evaporation of (DIAGONOFF), 1882, A., 355.
- heat of combustion of (LUGININ), 1880, A., 787.
- etherification of (MENSCHUTKIN), 1882, A., 818.
- wash-waters of the crude product of the nitration of (HAITINGER), 1881, A., 1116.
- Amylic alcohols** (WISCHNEGRADSKY), 1878, A., 393.
- optical properties of (LEY), 1874, 350.
- n*-**Amylic bromide**, action of, on dimethylaniline (CLAUS and RAUTENBERG), 1881, A., 584.
- chloride, heat of formation of (BERTHELOT), 1881, A., 9.
- fluoride (YOUNG), 1881, T., 492.
- iodide, action of the copper-zinc couple on (GLADSTONE and TRIBE), 1873, 678.
- iso***Amylic acetoacetate**, and the action of chlorine on (CONRAD), 1877, ii., 435.
- benzoate, vapour-density of (TROOST), 1879, A., 1025.
- iso***Amylic benzothiocarbamate** (MIQUEL), 1877, ii., 871.
- carbonate and chloroformate (RÖSE), 1881, A., 252.
- chloroxalate, action of, on benzene, toluene, naphthalene, and *o*-nitrotoluene (ROSER), 1881, A., 731.
- cyanate (CUSTER), 1879, A., 913.
- ethylacetoacetate, action of chlorine on (CONRAD), 1877, ii., 436.
- hippurate (CAMPANI), 1878, A., 673.
- hydrogen sebate (NEISON), 1876, i., 314, 323.
- iodide, action of caustic potash on (FLAWITZKY), 1874, 241.
- nitrite, action of, on blood (GIACOSA), 1879, A., 816.
- phenyldithiocarbamate (WILL), 1882, A., 1089.
- sebate (NEISON), 1876, i., 320.
- thiocyanopropionate (FREYTAG), 1880, A., 312.
- iso*valerate, density, boiling point and rotatory power of (PIERRE and PUCHOT), 1873, 1017.
- Amylidenamine silver nitrate**. See *iso*Valeraldehyde-ammonia, compound of, with silver nitrate.
- iso***Amylidene-*m*-amidobenzoic acid** (SCHIFF), 1882, A., 304.
- Amylideneaniline** (LIPPMANN and STRECKER), 1879, A., 462, 714.
- iso***Amylidenic bromide and chloride**. See Pentane, *di*bromo- and *dichloro*-.  
*α*-*iso***Amylnaphthalene** (LEONE), 1882, A., 1210.
- Amylnitrous acid**, and some of its salts (CHANCEL), 1882, A., 710.
- Amylodextrin**, sodium-compound of (PFEIFFER and TOLLENS), 1882, A., 491.
- Amyloid substance** peculiar to the asci of *Pyrenomyces* (CRIÉ), 1879, A., 613.
- iso***Amyloxanthranol**, preparation and derivatives of (LIEBERMANN), 1881, A., 100; (LIEBERMANN and LANDSHOFF), 1881, A., 608; 1882, A., 861.
- dinitr.* (LIEBERMANN), 1881, A., 100.
- Amyloxysulphobenzide**. See *Diiso*-*amyldihydroxydiphenylsulphone*.
- iso***Amylphenol** (LIEBMAN), 1882, A., 171, 727.
- iso***Amyl-phosphine and -phosphinic acid** (V. HOFMANN), 1873, 882.
- iso***Amylpiperidine** and its derivatives (SCHOTTEN), 1882, A., 982.
- iso***Amylpyrroline** (BELL), 1879, A., 525.
- tert.*-**Amylthiocarbimide** (RUDNEFF), 1879, A., 713; 1880, A., 518.

**Amylum.** See Starch.

**Paramylum.** oxidation-products of (HABERMANN), 1874, 1077.

**Amylxanthic acid,** potassium salt of (ZÖLLER and GRETE), 1875, 1255.

**Amyrin** (BURI), 1876, ii., 422; (HESSE), 1879, A., 73.

**Anacardium nuts,** black dye obtained from (BÖTTGER), 1873, 205.

**Analcite** (*analcite*; *picranalcite*) (v. ZEPHAROVICH), 1881, A., 996; (BEN-SAUDE), 1882, A., 285.

from Etna (v. LASAULX), 1882, A., 284.

from the Kerguelen Islands (LASPEYRES), 1878, A., 278.

from Puy-de-Dôme (GONNARD), 1877, ii., 283.

artificial production of (DESCHULTEN), 1881, A., 25; 1882, A., 479.

**Analysis,** methods of (GARSIDE), 1875, 1287; (PELLET), 1877, i., 226; (CLASSEN), 1879, A., 969.

errors arising from the use of Bohemian glass vessels in (TRUCHOT), 1875, 382.

use of bromine in (WAGNER), 1876, i., 741; ii., 214; (VULPIUS), 1876, i., 742; (DE KONINCK), 1881, A., 193; (HARDING), 1882, A., 138.

use of Huber's reagent in (ANON.), 1877, ii., 352.

use of "ring-burner" in (SADTLER), 1874, 1098.

use of sulphuretted hydrogen in the dry way in (CARNOT), 1879, A., 963.

use of the thermo-analyser in (MULDER), 1873, 526.

reduction of weighings in air in (BECKER), 1879, A., 396.

test papers for (MOHR), 1874, 1098.

electrolytic (LUCKOW), 1880, A., 282; (SCHICHT; FRESENIUS and BERGMANN), 1880, A., 747; (CLASSEN and v. REIS), 1881, A., 1081; (ANON.), 1882, A., 125; (CLASSEN), 1882, A., 896.

gas. See Gas analysis.

milk. See Agricultural Chemistry.

organic (LÖWE), 1873, 1057; (CRETIER), 1874, 921; (LUTTON), 1876, i., 966; (WANKLYN and COOPER), 1878, A., 1010.

estimation of hydrogen occluded by copper, with special reference to (THUDICHUM and HAKE), 1876, ii., 251.

of difficultly combustible substances (DEMEL), 1882, A., 998.

use of potassium dichromate in ultimate (JOHNSON), 1874, 1011.

**Analysis,** apparatus for heating substances in sealed tubes under high pressure suitable for (ČECH), 1877, ii., 639.

quantitative, improved apparatus for use in (GAWALOWSKI), 1874, 287.

blowpipe (CORNWALL), 1876, ii., 354; (CHAPMAN), 1877, i., 489; ii., 216; (KÖNIG), 1879, A., 740.

of silver lead (LYTE), 1880, A., 585.

gas apparatus for (HIRSCHWALD), 1877, ii., 215.

colorimeter for (LEEDS), 1878, A., 807.

spectrum. See under Photochemistry. volumetric, adjustment of (LYTE), 1874, 708.

new method of, by the conversion of cuprous into cupric chloride (JEAN), 1875, 1286.

portable apparatus for (SESTINI), 1877, ii., 798.

accurate perception of colour-change in (DUPRÉ), 1881, A., 121.

use of sodium monochromatic light to distinguish colour-change in (HENRY), 1873, 935.

preparation of standard acid for (KNÜBLAUCH), 1882, A., 1230.

preparation of standard ammonia solution for (HOUEAU), 1877, ii., 916.

standard soda-solution for (ENDEMANN and PROCHAZKA), 1880, A., 924.

See also Indicators.

water. See Water.

**Anamirtin** (BARTH and KRETSCHY), 1881, A., 286.

**Anatase** (KLEIN), 1875, 873.

from Rauris in Salzburg (VRBA), 1882, A., 574.

crystals, new development of, from Cavradi (in the Tavetsch) (VOM RATH), 1876, i., 886.

See also Titanium dioxide.

**Anda-assu,** oil of (ANON.), 1882, A., 435.

**Andalusite,** colourless (GORCEIX), 1878, A., 118.

volume constitution of (SCHRÖDER), 1874, 876.

from Brazil (BERTRAND), 1881, A., 25.

from Delaware Co., Pennsylvania (DANA), 1873, 257.

from Elba (GRATTAROLA), 1878, A., 119.

**Andesine** from the Ural (VOM RATH), 1873, 249.



- Andesite** (SAINTE-CLAIRE DEVILLE), 1876, ii., 611.  
 from Czibele in the Gutin range of North Transylvania, analysis of (VOLKMER), 1873, 1211.  
 containing angite and hornblende from Toplitia and Transylvania (JOHN), 1875, 550.  
 quartziferous, of Transylvania and Hungary (DOELTER), 1874, 240.  
 tridymite-bearing, from Gerecsecs (VOM RATH), 1877, ii., 280.
- Andradite** (LIVERSIDGE), 1881, A., 991.
- Andrewsite** (MASKELYNE), 1875, 586.  
 locality and mode of occurrence of (FORSTER), 1876, i., 531.
- Anemopsis californica**. See *Yerba mansa*.
- Anethoil** (*p-allylanisole*; *methyl-p-propenylphenol*) and its homologues (PERKIN), 1877, ii., 660.  
 the products of reduction and the composition of (LANDOLPH), 1876, ii., 79.  
 constitution of the radicle  $C_3H_5$  in (ERLENMEYER), 1877, ii., 479.  
 action of boron fluoride on (LANDOLPH), 1877, ii., 863; 1878, A., 576.  
 action of chromyl dichloride on (ETARD), 1879, A., 320; 1881, A., 583.  
 action of nitrous acid on (TÖNNIES), 1881, A., 167.  
 action of nitrosyl chloride on (TÖNNIES), 1879, A., 517.  
 action of alcoholic potash on (LANDOLPH), 1880, A., 385.  
 derivatives of (LANDOLPH), 1876, i., 246, 705.  
 di-, tetra-, and hexa-hydrides (LANDOLPH), 1876, i., 246; 1880, A., 385.
- Anethoil, chlor-**, action of alcoholic potash on (LANDOLPH), 1876, i., 705; 1880, A., 385.
- Anethoilcamphor**. See *Anethoil tetrahydride*.
- Metanethoilcamphor** (PERRENOLD), 1877, ii., 480.
- Angelactic acid, chlor-**. See *Hydroxy-angelic acid, chloro-*.
- Angelic acid** (*pentenoic acid*) (SCHMIDT), 1879, A., 617; 1881, A., 1126.  
 from Roman chamomile oil (FITTIG), 1877, i., 97; ii., 429; (FITTIG and KOPP), 1879, A., 454.  
 constitution of (FITTIG), 1879, A., 456.  
 action of hydrobromic acid on (FITTIG and PAGENSTECHER), 1879, A., 455.  
 conversion of, into tiglic acid (FITTIG and KOPP), 1879, A., 454.
- Angelic acid** (*pentenoic acid*), dibromide of (DEMARÇAY), 1876, ii., 70.  
 separation of, from tiglic acid (FITTIG and PAGENSTECHER), 1879, A., 455.
- Angelic acid, mono- and di-chlor-** (PINNER and KLEIN), 1879, A., 43.
- isoAngelic acid** (DUVILLIER), 1879, A., 706.
- Angelic acids** of different origin (v. MILLER), 1879, A., 45; 1880, A., 314.
- Angelic sulphocarbimide**. See *Pentenylthiocarbimide*.
- Angelica** (*angelica*), methylethyl-acetic and hydroxymyristic acids in the essential oil of the fruit of (MÜLLER), 1882, A., 496.
- Angelica**, essence of (NAUDIN), 1882, A., 410; (BEILSTEIN and WIEGAND), 1882, A., 1300.  
 chemical constituents of (BRUNNER), 1876, i., 939.
- Angelyl-**. See *Pentenyl-*.
- Anglesite** (FRENZEL), 1876, i., 52.  
 from Arizona (BRUSH), 1873, 1205.  
 of Sardinia, crystalline forms of (SELLA), 1880, A., 96; 1881, A., 397.  
 See also *Lead sulphate*.
- Angostura bark**, true, essential oil of (OEBERLIN and SCHLAGDENHAUFEN), 1877, ii., 932.  
 false (SHENSTONE), 1878, A., 326.  
 microchemical examination of (CAZENÈVE), 1875, 101.
- Anhydrides**, intermediate formation of, in chemical reactions (SALOMON), 1876, i., 559.  
 action of dehydrating substances on (GABRIEL and MICHAEL), 1877, ii., 486; 1878, A., 229, 426; 1879, A., 245.  
 action of, on guanidine and its derivatives (MC CREATH), 1875, 465, 885; 1876, i., 400.  
 acid, behaviour of, with haloid salts in absence of oxygen (SCHULZE), 1880, A., 437.  
 of the fatty and aromatic series, formation of, by the action of phosphoric anhydride on the corresponding acids (GAL and ETARD), 1876, i., 899.  
 organic, relations of organic acids to (FITTIG), 1876, i., 898.
- Anhydrite** at Airolo, and in the Val Canaria (v. FRITSCH), 1874, 673.  
 See also *Calcium sulphate*.
- $\alpha$ -Anhydrodiamidobenzoylxylylene**. See *Benzenyl-m-xylylene-4:5-diamine*.
- Anhydrodiamido-p-tolylxylylene**. See *p-Tolonyl-m-xylylene-5:6-diamine*.

- Anhydrobenz-**. See Benzenyl-.
- Anhydrobenzamidooethylene o-amidophenyl ether**. See Benzenyl- $\omega$ : $\omega$ -diamidophenetoil.
- Anhydrobenzamidotoluic acid**. See Benzenylphenylenediamine-*p*-carboxylic acid.
- Anhydrobenzoyl/diamidobenzene**. See Benzenylphenylenediamine.
- Anhydrobenzoyl/diamidostilbene**. See Triphenylglyoxaline.
- Anhydro-o-chlorobenz-m-amido-p-toluide**. See Benzenyltolylene-diamine, *o*-chloro-.
- Anhydro-compounds** (HÜBNER), 1878, A., 143; 1881, A., 1130; 1882, A., 180, 503.
- p*-Anhydrodisulphaminebenzoic acid**. See Sulphamidobenzoic sulphinide.
- Anhydro-*p*-hydroxybenzoyl/diamidophenanthrene**. See *p*-Hydroxybenzenyl/diamidophenanthrene.
- Anhydrolupinine** (BAUMERT), 1882, A., 873.
- Anhydro-o-methoxybenzoyl/diamidophenanthrene**. See *o*-Methoxybenzenyl/diamidophenanthrene.
- Anhydrosalicyl/diamidobenzene**. See *o*-Hydroxybenzenyl-*o*-phenylenediamine.
- Anhydrosalicyl/diamidophenanthrene**. See *o*-Hydroxybenzenyl/diamidophenanthrene.
- Anhydrosulphamidisophthalic acid and its salts** (REMSEN and COALE), 1880, A., 258; 1881, A., 1038; (JACOBSSEN), 1881, A., 51.
- Anhydrosulphamidoterephthalic acid** (HALL and REMSEN), 1880, A., 257.
- Anhydro-o-sulphaminebenzoic acid**. See "Saccharin."
- Anhydrosulphamineuvitic acid**. See Sulphamidouvitic anhydride.
- Anhydrotolyl/diamidobenzene**. See Tolonylphenylenediamine.
- Anhydrotolyl/diamidotoluene**. See Tolonyltolylenediamine.
- Anhydrotolylketamine** (STODDARD), 1878, A., 504; (BRÜCKNER), 1881, A., 93.
- Anhydrotropeine**. See Atropyltropeine under Alkaloids.
- Anhydrovaleryl/diamidotoluene**. See Tolylenepentenyl-diamine.
- Anhydroxaltoluidide**. See Oxalenyl-ditolylenetetramine.
- Anhydroxanilide**. See Oxalenyl-diphenylenetetramine.
- Anil-**. See Phenylimido-.
- Anilic acid, brom-**. See Bromanilic acid.
- Anilic acid, chlor-**. See Chloranilic acid.
- Anilic acid, nitr-**. See Nitrailic acid.
- Anilides**, action of sulphurous chloride and ethylsulphuric chloride on (WENGHÖFFER), 1878, A., 297.
- Anilido-**. See also Phenylamido-.
- Anilidoacetamide** (MEYER), 1876, i., 372.
- Anilidoacetic acid** (*phenylglycin*; *phenylglycine*) (MEYER), 1882, A., 519.  
action of heat on (MEYER), 1878, A., 294.  
action of bromine water and of nitrous acid on (SCHWEBEL), 1878, A., 795.
- Anilidoacetic acid, *p*-brom-**, and its bromanilide (DENNSTEDT), 1880, A., 634.  
*tribrom-* and *nitroso-* (SCHWEBEL), 1878, A., 795.  
See also Phenylamidoacetic acid.
- Anilidoacetonitrile** (ENGLER), 1874, 76.
- Anilidoaceto-*p*-toluidide** (MEYER), 1876, i., 372.
- $\beta$ -Anilidobutyric acid and its anilide** (BALBIANI), 1880, A., 462, 542.
- Anilidochloro- $\alpha$ -naphthaquinone** (v. KNAPP and SCHULTZ), 1882, A., 510.
- Anilidodimethylamidotrichlorophenol-sulphonic acid** (*trichlorodimethyl-anilineamidophenolsulphonic acid*) (SCHMITT and ANDRESEN), 1882, A., 401.
- Anilidodiphenylmethane** (MELDOLA), 1882, T., 199.
- Anilidomalonic acid, anilide of** (CONRAD and BISCHOFF), 1882, A., 39.
- Anilidophenylthiocarbimide**. See Phenylamidomethenylamidophenyl mercaptan.
- Anilidoisovaleric acid** (DUVILLIER), 1881, A., 713.
- Aniline** (*phenylamine*; *amidobenzene*) (HÜBNER and RETSCHY), 1873, 1146.  
in coal-tar oils (SMITH), 1874, 853.  
conversion of benzoic acid into (ROTERMUND), 1875, 768.  
transformation of quinoline into (DEWAR), 1877, ii., 499.  
manufacture, oil-baths in the (ANON.), 1873, 306.  
difficulty of purifying (ROSENSTIEHL), 1876, i., 934.  
physical properties of (THORPE), 1880, T., 221.  
electrolysis of (GOPPELSROEDER), 1876, ii., 308.  
and other compounds of the same group, thermochemistry of (LUGNIN), 1877, ii., 568.

- Aniline** (*phenylamine*; *amidobenzene*),  
 heat of formation of (RAMSAY),  
 1879, T., 696.  
 action of benzylic chloride on (MEL-  
 DOLA), 1882, T., 200.  
 action of bromobenzene on (MERZ and  
 WEITH), 1873, 73.  
 action of carbonic oxide on  
 (GARNITSCH-GARNITZKY), 1878, A.,  
 217.  
 action of chloroacetic chloride on  
 (TOMMASI), 1873, 911.  
 action of trichloroacetic chloride on  
 (TOMMASI and MELDOLA), 1874, 313.  
 action of, on chloral (WALLACH),  
 1875, 349.  
 action of, on chloral and on chloral  
 hydrate (AMATO), 1876, ii., 637.  
 action of chlorine on a mixture of  
 phenol and (JACQUEMIN), 1873,  
 1147.  
 action of, on dichlorhydrin (CLAUS),  
 1875, 770; (SCHIFF), 1875, 1033.  
 action of epichlorhydrin on (v.  
 HOERMANN), 1882, A., 1067.  
 action of, on ethylic acetoacetate  
 (OFFENHEIM and PRECHT), 1876,  
 ii., 505.  
 action of ethylisothiacetanilide on  
 (WALLACH and BLEIBTREU), 1879,  
 A., 786.  
 action of, on fulminates (STEINER),  
 1875, 164.  
 action of, on glyoxylic acid (BÖR-  
 TINGER), 1879, A., 51.  
 action of hydrogen dioxide on (LEEDS),  
 1882, A., 502.  
 action of methylic bromide, chloride  
 and iodide on (v. HOFMANN), 1877,  
 ii., 604.  
 action of nitrobenzene on (v.  
 DECHEND and WICHELHAUS), 1876,  
 i., 606.  
 action of, on pyruvic acid (BÖR-  
 TINGER), 1877, ii., 596.  
 action of sulphur bromide, chloride  
 and iodide on (SCHMIDT), 1878, A.,  
 974.  
 action of sulphur chloride on  
 (ROORDA SMIT), 1876, i., 602.  
 action of sulphuryl chloride on  
 (BÖTTINGER), 1878, A., 863.  
 action of sulphuryl chloride and  
 ethylsulphuric chloride on (WENG-  
 HÖFFER), 1877, ii., 447; 1878, A.,  
 297.  
 action of thiocarbonyl chlorides and  
 perchlorinated methyl mercaptan  
 on (RATHKE), 1873, 263.  
 butylation of (STUDER), 1881, A.,  
 898; 1882, A., 176.
- Aniline** (*phenylamine*; *amidobenzene*),  
 oxidation of, by potassium per-  
 manganate (HOOGWERFF and VAN  
 DORP), 1878, A., 297, 973.  
 new red colouring matter from  
 (HAMEL), 1873, 640.  
 residues (HELL and SCHOOP), 1879,  
 A., 715.  
 tailings, base  $C_{13}H_{13}N$  from (JACK-  
 SON), 1876, i., 266; 1877, ii., 606,  
 762.  
 vapour, action of heated lead oxide on  
 (BEHR and VAN DORP), 1873, 1135.  
 compounds of cobalt and nickel  
 chlorides with (LIPPMANN and  
 VORTMANN), 1878, A., 787; 1879,  
 A., 461.  
 compound of, with cupric chloride  
 (DESTREM), 1879, A., 376.  
 compounds of, with mercuric bromide  
 and iodide (KLEIN), 1880, A., 632.  
 derivatives (MILLS), 1875, 647.  
 behaviour of, when passed through  
 red-hot tubes (NIETZKI), 1877,  
 ii., 447.  
 methylated derivatives of, and the  
 colours obtained therefrom (MON-  
 NET, REVERDIN, and NÖLTING),  
 1879, A., 310.  
 homologues of, synthesis of, from  
 bromaniline (CLAUS), 1882, A., 722.  
 salts (BEAMER and CLARKE), 1879,  
 A., 785.  
 results of fusing together certain  
 salts of toluidine and (BIBANOFF),  
 1874, 1190.  
 analytical and toxicological researches  
 on (JACQUEMIN), 1874, 1105.  
 tests for (LUPTON), 1876, i., 966;  
 (JACQUEMIN), 1876, ii., 665; 1877,  
 i., 109.
- Aniline**, *mono*-, *di*-, and *tri*-chloroacetate  
 (BEAMER and CLARKE), 1879, A.,  
 786.  
*dichloroacetate* (ČECH and SCHWEBEL),  
 1878, A., 216.  
*chlorate* and *perchlorate* (BEAMER  
 and CLARKE), 1879, A., 785.  
*ferrocyanides* (FISCHER), 1878, A., 407;  
 (EISENBERG), 1880, A., 231; 1881,  
 A., 261.  
*hydrochloride*, preparation of (PINNER  
 and SCHAUMANN), 1881, A., 811.  
 heat of formation of (LUGININ),  
 1879, A., 767, 871.  
 action of *isobutylic* alcohol on  
 (STUDER), 1881, A., 898.  
 secondary monamines formed by  
 the action of liquid toluidine on  
 (GIRARD and WILLIM), 1876,  
 ii., 98.

- Aniline** hydrofluoride and iodate (BEAMER and CLARKE), 1879, A., 786.
- hydroxybenzoates, action of heat on (KUPFERBERG), 1878, A., 320.
- mercury chloride (FORSTER), 1874, 698.
- muicate (KÖTTNITZ), 1873, 163.
- dry distillation of (LICHTENSTEIN), 1881, A., 721; 1882, A., 178.
- nitrate and oxalate, heat of formation of (LUGININ), 1879, A., 871.
- phthalate (BEAMER and CLARKE), 1879, A., 786.
- platinoeyanide (SCHOLZ), 1881, A., 708.
- sulphate, oxidation of a mixture of, with *o*- and *p*-toluidine sulphates (PERKIN), 1879, T., 728.
- silver sulphate (MIXTER), 1881, A., 1129.
- sulphatoperiodide (JÖRGENSEN), 1877, i., 715.
- dithionate (MALTSCHESKY), 1880, A., 240.
- Aniline**, *p*-brom- (CALM and HEUMANN), 1880, A., 880.
- decomposition of (FITTIG and BÜCHNER), 1878, A., 50.
- reaction of the thiocarbimide from, with copper filings (WEITH and LANDOLT), 1875, 1200.
- o*-, *m*-, and *p*-brom-, constitution of (KÖRNER), 1876, i., 232.
- 2:4-*di*brom- (FITTIG and BÜCHNER), 1878, A., 50.
- preparation of (KÖRNER), 1876, i., 212.
- 2:4:6-*tri*brom- (FITTIG and BÜCHNER), 1878, A., 50; (WENGHÖFFER), 1878, A., 298; (BENEDIKT), 1879, A., 464.
- action of nitric acid on (LOSANITSCH), 1882, A., 954.
- conversion of, into *tetrabromobenzene* (v. RICHTER), 1876, i., 390.
- 3:4:5-*tri*- and 2:3:4:6-*tetra*-brom-, preparation of (KÖRNER), 1876, i., 212.
- 2:4-bromonitr- (HÜBNER), 1878, A., 142.
- 3:6-bromonitr-, preparation and properties of (KÖRNER), 1876, i., 217.
- 4:2-bromonitr-, and 2:4:6-*di*bromonitr- (REMMERS), 1874, 696.
- 2:4:6-*di*bromonitr-, preparation of (KÖRNER), 1876, i., 210.
- 2:6:4-*di*bromonitr- (LOSANITSCH), 1882, A., 955.
- preparation and properties of (KÖRNER), 1876, i., 210.
- 3:4:6-*di*bromonitr- (HÜBNER), 1878, A., 142.
- Aniline**, 2:4:6:3-*tribromonitr*- (REMMERS), 1874, 696.
- preparation of (KÖRNER), 1876, i., 210.
- 4:5:6:2-*tribromonitr*-, constitution of (KÖRNER), 1876, i., 217.
- o*- and *m*-chlor- (BEILSTEIN and KURBATOFF), 1879, A., 143.
- action of sodium on (ANSCHÜTZ and SCHULTZ), 1878, A., 49.
- p*-chlor- (CALM and HEUMANN), 1880, A., 880.
- o*-, *m*-, and *p*-chlor-, constitution of (KÖRNER), 1876, i., 233.
- heat of substitution of (LUGININ), 1879, A., 872.
- conversion of, into the corresponding chlorophenols and chlorobenzoic acids (BEILSTEIN and KURBATOFF), 1874, 806.
- 2:4-*dichlor*- (WENGHÖFFER), 1878, A., 298.
- 3:5-*dichlor*-, action of halogens on (LANGER), 1882, A., 1058.
- isomeric *dichlor*- (BEILSTEIN and KURBATOFF), 1875, 1037; 1876, i., 712; 1877, i., 473; 1878, A., 299; 1879, A., 143.
- 2:4:6-*trichlor*- (WENGHÖFFER), 1878, A., 297.
- isomeric *trichlor*- (BEILSTEIN and KURBATOFF), 1876, i., 712; 1879, A., 143.
- isomeric *tetrachlor*- (BEILSTEIN and KURBATOFF), 1879, A., 143.
- 2:4-chlorobrom- (FITTIG and BÜCHNER), 1878, A., 50.
- 4:2-chloronitr- (LAUBENHEIMER and KÖRNER), 1875, 648.
- 3:6-chloronitr- (LAUBENHEIMER), 1878, A., 405, 976; (UHLEMANN), 1878, A., 978.
- isomeric chloronitr- (BEILSTEIN and KURBATOFF), 1875, 1037; 1876, ii., 308, 631.
- 4:6:2-*dichloronitr*- (WITT), 1876, i., 935.
- isomeric *dichloronitr*- (BEILSTEIN and KURBATOFF), 1878, A., 974; 1879, A., 309.
- 3:4:6:2-*trichloronitr*- and 3:4:2:6-*dichlorodinitr*- (BEILSTEIN and KURBATOFF), 1879, A., 310.
- m*-cyan- (GRIESS), 1876, i., 267.
- o*-, *m*-, and *p*-iod-, constitution of (KÖRNER), 1876, i., 233.
- 2:4-*di*iod- and its salts (RUDOLPH), 1878, A., 422.
- p*-mono-, 2:4-*di*-, 2:4:6-*tri*-iod-, 2:4- and 4:2-iodonitr-, and 2:4:3-, and 2:6:4-*di*iodonitr- (MICHAEL and NORTON), 1878, A., 406.



**Aniline**, nitr-, action of potassium nitrite on (MÜLLER-JACOBS), 1878, A., 140.

*o*-nitr- (LAUBENHEIMER), 1878, A., 975.  
action of anhydrous oxalic acid on (HÜBNER), 1882, A., 180.

derivatives of (RUDOLPH), 1879, A., 921.

*o*- and *m*-nitr-, action of halogens on (LANGER), 1882, A., 954.

*m*-nitr-, silver nitrate (MIXTER), 1881, A., 1130.

*p*-nitr-, hydrochloride, heats of formation, and of substitution of (LUGININ), 1879, A., 768, 872. >  
action of carbon disulphide on (LOSANITSCH), 1882, A., 955.

*o*-, *m*-, and *p*-nitr-, preparation of (KÖRNER), 1876, i., 209, 210; (HÜBNER), 1881, A., 1130.

action of phenylthiocarbimide on (LOSANITSCH), 1882, A., 183.

2:4-*d*nitr- (LOSANITSCH), 1879, A., 67; 1880, A., 812.

2:6-*d*nitr- (SALKOWSKI and REHS), 1874, 801.

formation of, by the action of ammonia on dinitranisole (SALKOWSKI), 1873, 280.

2:4:6-*tr*nitr-. See Picramide.

thio- (*p*-diamidophenyl sulphide) (SCHMIDT), 1878, A., 974.

action of nitrous acid on (KRAFFT), 1874, 806; 1875, 153.

dithio-, and its sulphate (SCHMIDT), 1878, A., 974.

$\psi$ -dithio- (*p*-diamidophenyl disulphide) (SCHMIDT), 1878, A., 975.

**Aniline colours**. See under Colouring matters.

**Aniline-2:4-disulphonic acid** (*disulphanilic acid*) and its salts (LIMPRICHT), 1876, ii., 302; (ZANDER), 1880, A., 122.

6-brom- and its salts (ZANDER), 1880, A., 123.

**Aniline-3:4-disulphonic acid**, and its salts (LIMPRICHT), 1876, ii., 303; (ZANDER), 1880, A., 124.

**Aniline-3:5-disulphonic acid** (HEINZELMANN), 1877, ii., 772; 1878, A., 409.

2- or 4-*mono*- and 2:4-*di*-brom- (HEINZELMANN), 1877, ii., 773.

**Anilines**, substituted, thermochemistry of (LUGININ), 1877, ii., 696; 1878, A., 832.

action of sulphuric acid on (SMYTH), 1875, 164.

*o*-**Anilinesulphonic acid** (BERNSEN), 1875, 1028; (BAHLMANN), 1877, ii., 608.

*m*-**Anilinesulphonic acid** (BECKURTS), 1876, ii., 304; (LIMPRICHT), 1878, A., 221.

action of bromine and chlorine on (BECKURTS), 1876, ii., 304.

*p*-**Anilinesulphonic acid** (*sulphanilic acid*) and its salts (SMYTH), 1875, 164; (WENGHÖFFER), 1878, A., 298; (POST), 1880, A., 239; (LAAR), 1880, A., 320; 1882, A., 195; (LIMPRICHT), 1882, A., 1075.

constitution of (KÖRNER), 1876, i., 236.

**Anilinesulphonic acids**, *o*- and *m*-, constitution of (KÖRNER), 1876, i., 236.

*o*- and *p*- (LIMPRICHT), 1875, 1028.

*m*- and *p*- (LIMPRICHT), 1875, 267.

*o*-, *m*-, and *p*- (LIMPRICHT), 1876, i., 81, 931; 1877, ii., 192.

**Anilinesulphonic acid**, chlor- (PRAEST), 1873, 639.

nitr- (LIMPRICHT), 1877, i., 597.

2-nitr-, and its salts (POST and HARDTUNG), 1880, A., 394.

**Aniline-2-sulphonic acid**, 4-brom- (NÖLTING), 1876, i., 928; (LIMPRICHT), 1876, ii., 307; 1877, ii., 192; (BORNES), 1877, ii., 770.

4:5 *di*brom- and its salts (SPIEGELBERG), 1879, A., 799.

4:6-*di*brom- (LIMPRICHT), 1876, i., 586; ii., 307; 1877, ii., 192.

**Aniline-3-sulphonic acid**, 4-brom- (BAHLMANN), 1877, ii., 608.

2:5-*di*brom- (BORNES), 1877, ii., 769.

4:6-*di*brom- (BERNSEN), 1875, 1028; (BECKURTS), 1876, ii., 304; (REINKE), 1877, ii., 465; (KNUTH), 1877, ii., 468; (SPIEGELBERG), 1879, A., 796.

4:6-*di*brom- and 2:4:6-*tri*brom- (LIMPRICHT), 1878, A., 492.

2:4:6-*tri*brom- (BERNSEN), 1875, 1029; (BECKURTS), 1876, ii., 304; (REINKE), 1877, ii., 465; (KNUTH), 1877, ii., 468.

2:5:6-*tri*brom- (SPIEGELBERG), 1879, A., 796.

**Aniline-4-sulphonic acid**, 2:6-*di*brom- (ZANDER), 1880, A., 123.

decomposition of (LIMPRICHT), 1878, A., 221.

2-nitr- (GOSLICH), 1875, 764; 1876, i., 929.

**Aniline-5-sulphonic acid**, 2-brom-, and its salts (GOSLICH), 1875, 764; 1876, i., 929; (BAHLMANN), 1877, ii., 610; (LIMPRICHT), 1878, A., 221, 492; (SPIEGELBERG), 1879, A., 796; (ANDREWS), 1881, A., 174.

- Aniline-5-sulphonic acid**, 2:3:4:6-*tetra*-brom- (LIMPRICHT), 1878, A., 495.  
3-chlor- (POST and MEYER), 1881, A., 1037.
- Aniline-6-sulphonic acid**, 2:3:4:5-*tetra*-brom- (SPIEGELBERG), 1879, A., 802.  
3-nitr- and its salts (POST and HARDTUNG), 1880, A., 395.
- Aniluvitonic acid**. See 2'-Methyl-quinoline-4'-carboxylic acid.
- Animal body**. See Organism.
- Animal charcoal** (*char*, *bone-black*) and bye-products in its formation (SEBOR), 1874, 610.  
preparation of active (GRÄGER), 1873, 424.  
revivification of (EISSFELDT and THUMB), 1873, 303; (PREIS), 1874, 499.  
certain properties of (PELLET), 1880, A., 834.  
mode of action of (MEYER), 1874, 1025.  
behaviour of ammonium salts to (BIRNBAUM and BOMASCH), 1876, i., 803.  
action of, on salts (LIEBERMANN), 1878, A., 109.  
decolourising action of (SCHWARZ), 1873, 302.  
action of, in the sugar manufacture (CASAMAJOR), 1880, A., 758; (PELLET), 1881, A., 127; 1882, A., 673.  
absorption of sugar by (MOTT), 1882, A., 122.  
determination of the matter absorbed by, in refining sugar (STAMMER), 1873, 1061.  
is the decolourising power of, due to the carbon or to porosity? (JIEŇSKÝ), 1878, A., 266.  
estimation of the decolourising power of (REINECKE and MEYER), 1880, A., 422.  
reducing action of, at low temperatures (HEINTZ), 1877, ii., 582.  
as material for purifying water (LEWIN), 1879, A., 343.  
filters, experiments with (FRANÇOIS DE CHAUMONT), 1879, A., 986.  
free lime and organic matter in (SMITH), 1876, i., 974.  
removal of chalk from, by acetic (pyroligneous) acid (KNAPP), 1873, 99.  
presence of ferrous sulphide in (SMITH), 1875, 299.  
artificial (FILTER), 1879, A., 844.  
substitute for (v. WACHTEL; SCHOTT), 1882, A., 1016.
- Animal charcoal** (*char*, *bone-black*) waste, conversion of (BATTUT) 1882, A., 1245.  
analysis of (STEWART), 1874, 920; 1876, i., 758.  
valuation of (SCHÖBER), 1873, 1060.  
estimation of caustic lime in (DIVIS), 1874, 709.  
estimation of organic matter in (THORN), 1876, i., 757.  
See also Carbon.
- Animal fluids**, "acidity" of (MALY), 1882, A., 1221.  
sterilisation of (MIQUEL and BEN-OIST), 1881, A., 835.  
reaction of (SOXHLET), 1873, 188.  
proof of the presence of carbamic acid in (HOFMEISTER), 1876, ii., 318.  
complete precipitation of albumin from (HOFMEISTER), 1879, A., 183.  
estimation of albumin in (HEYNSIUS), 1875, 918.  
See also Urine.
- Animal heat** (D'ARSONVAL), 1881, A., 1049.  
influence of alcohol on (BINZ), 1873, 518.
- Animal matter** dissolved in water, influence of intermittent filtration through sand on (HATTON), 1881, T., 259.  
alliacous odour and phosphorescence of putrefied (LEFORT), 1874, 813.  
disinfection and preservation of, for agricultural purposes (VAUTELET), 1880, A., 929.  
complete separation of arsenic from (GAUTIER), 1876, i., 110.
- Animal organism**. See Organism.
- Animals**. See Agricultural Chemistry.
- Animal tar**, compounds in (WEIDEL), 1880, A., 267; (WEIDEL and CIAMICIAN), 1880, A., 403.
- Animal tissues**, specific heat of (ROSENTHAL), 1880, A., 483.  
presence of alcohol in (BÉCHAMP), 1880, A., 174; 1881, A., 928.
- Anisaldehyde** (*p-methoxybenzaldehyde*), acids from (PERKIN), 1877, i., 408; (TIEMANN), 1882, A., 57.
- Anisamide** (*p-methoxybenzamide*), brom- (CRESPIT), 1882, A., 192.
- Anisbenzanisylhydroxylamine**. See Anisylbenzanisylhydroxylamine.
- Anisic acid** (*p-methoxybenzoic acid*), melting point of (OPPENHEIM and PFAFF), 1875, 1263.  
etherification of (MENSCHUTKIN), 1882, A., 487.

- Anisic acid** (*p*-methoxybenzoic acid), decomposition of the calcium salt of, by dry distillation (GOLDSCHMIEDT and HERZIG), 1882, A., 616.
- Anisic acid**, 3-brom- (BALBIANO), 1882, A., 169.
- 3-mono- and 3:5-di-brom-, and their derivatives (CRESPI), 1882, A., 191.
- 3-fluor- (PATERNO and OLIVERI), 1882, A., 615.
- 3:5-dinitr-, and its derivatives (SALKOWSKI and RUDOLPH), 1878, A., 72.
- o*-Anisidine, and its derivatives (KÖRNER), 1876, i., 235; (MÜHLHÄUSER), 1880, A., 641; 1882, A., 302; (HEROLD), 1882, A., 1287.
- oxidation of (MÜHLHÄUSER), 1880, A., 642.
- 4-mono- and 4:6-di-brom-, and their salts (STAEDEL and DAMM), 1879, A., 239; 1880, A., 641.
- p*-Anisidine (KÖRNER), 1876, i., 235.
- preparation and derivatives of (SALKOWSKI), 1875, 64.
- 2-mono- and 2:6-di-br-m- (STAEDEL and DAMM), 1880, A., 641.
- 2:6-(*l*)dichlor- (JAEGER), 1875, 1260.
- Anisil and anisilic acid** (BÖSLER), 1881, A., 421.
- Anisoil** (*phenyl methyl oxide; anisol*) (LANDOLPH), 1878, A., 576.
- from creosote (BRÄUNINGER), 1878, A., 147.
- new derivatives of (PERKIN), 1878, T., 211.
- Anisoil**, amido-. See Anisidine.
- 2:4-bromonitr- (STAEDEL and DAMM), 1880, A., 641.
- 4:2-bromonitr- (STAEDEL and DAMM), 1879, A., 239.
- 2:6:4- and 4:6:2-di-bromonitr- (KÖRNER), 1876, i., 238.
- 2:4-chloronitr- (FISCHLI), 1878, A., 866.
- 5:2-chloronitr- (UHLEMANN), 1878, A., 978.
- 4:2:6-chlorodinitr-, preparation of (KÖRNER), 1876, i., 230.
- nitr-derivatives of, decomposition of, by ammonia (SALKOWSKI), 1873, 280.
- m*-nitr- (BANTLIN), 1879, A., 238.
- behaviour of, towards ammonia (SALKOWSKI), 1879, A., 528.
- p*-nitr- (WILLGERODT), 1882, A., 396, 953.
- o*- and *p*-nitr-, constitution of (KÖRNER), 1876, i., 234.
- o*-, *m*-, and *p*-nitr-, physical and chemical properties of (POST and MEHRTESS), 1876, i., 579.
- Anisoil**, 2:3-, 2:5- and 3:4-dinitr-, and their decomposition by alcoholic ammonia (BANTLIN), 1879, A., 238.
- 2:4-dinitr- (WILLGERODT), 1879, A., 716.
- 2:4- and 2:6-dinitr-, physical and chemical properties of (POST and MEHRTESS), 1876, i., 579.
- 2:6-dinitr- (SALKOWSKI and REHS), 1874, 801.
- preparation and properties of (KÖRNER), 1876, i., 230.
- 2:4:6-trinitr-, physical and chemical properties of (POST and MEHRTESS), 1876, i., 579.
- Anisoil-red**, preparation of (ANON.), 1882, A., 125.
- Anisoin** (BÖSLER), 1881, A., 421.
- Anisylbenzanisylhydroxylamine** (*anisylbenzanisylhydroxylamine*) (LOSSEN), 1877, ii., 328.
- Anisylbenzethylhydroxylamine** (EISELER), 1875, 767.
- Anisylbenzhydroxylamine** (LOSSEN), 1875, 634.
- Anisylcarbamide** (*methoxyphenylcarbamide*) (MÜHLHÄUSER), 1880, A., 642; 1882, A., 302.
- Anisylidibenzhydroxylamine** (LOSSEN), 1875, 634; 1877, ii., 328.
- Anisylidiphenylcarbamide** (LOSSEN), 1874, 254.
- Anisylhydroxylamine** (LOSSEN), 1874, 254; 1875, 634.
- compound of, with lead acetate (HODGES), 1877, i., 69.
- Anisylthiocarbamide** (*methoxyphenylthiocarbamide*) (MÜHLHÄUSER), 1880, A., 642; 1882, A., 302.
- Ankerite**, from Phenixville (KÖNIG), 1879, A., 604.
- some minerals from the Silurian ironstone deposits and the coal-formation of Bohemia, resembling; and on the chemical constitution of the minerals classed with (BOŘICKÝ), 1877, i., 581.
- Annerödite**, a new mineral (BRÖGGER), 1882, A., 579.
- Annual General Meeting**, 1873, 769; 1874, 1194; 1875, 1305; 1876, i., 617; ii., 681; 1877, i., 493; 1878, T., 221; 1879, T., 257; 1880, T., 247; 1881, T., 177; 1882, T., 229.
- Annals**, ripening of (DEHÉRAIN and BRÉAL), 1882, A., 80, 419.
- Anomite** (TSCHERMAK), 1878, A., 711; 1880, A., 532.
- Anorthite**, composition of (HIORTDAHL), 1881, A., 698.

**Anorthite**, production of, by the fires in the coal beds at Commentry (MAL-LARD), 1881, A., 690.

crystallographic description of (VOM RATH), 1873, 257.

twin laws of (VOM RATH), 1873, 857.

pseudomorph after (ROEPFER), 1879, A., 1023.

from the Pesmeda Alp (VOM RATH), 1875, 869; 1878, A., 713.

See also Felspar.

**Anthemol** (FITTIG and KÖBIG), 1879, A., 455.

**Anthophyllite** (*antholite*) from Bamle in Norway (DES CLOIZEAUX), 1877, ii., 851.

from Delaware Co., Pennsylvania (LEEDS), 1874, 29.

supposed, analysis of (HIORTDAHL), 1881, A., 698.

**Anthosiderite** (FISCHER) 1881, A., 990.

**Anthracenammine**. See Anthramine.

**Anthracene** (FITTIG), 1873, 750; (CAR-NELLEY), 1880, T., 712.

in idryl (GOLDSCHMIEDT), 1878, A., 155.

production of (VERSMANN), 1873, 956; 1877, i., 239; (ANON.), 1874, 100.

synthesis of (VAN DORP), 1873, 500; 1874, 63.

formation of, from anthraquinone (v. PERGER), 1881, A., 607.

synthesis of, from *o*-bromobenzylie bromide (JACKSON and WHITE), 1880, A., 262; 1881, A., 822.

formation of, from benzylie chloride (ZINCKE), 1874, 690.

constitution of (BEHR and VAN DORP), 1874, 470.

fluorescence of (MORTON), 1873, 235.

action of chromyl dichloride on (HALLER), 1877, ii., 494.

action of hydrogen dioxide on (LEEDS), 1882, A., 502.

action of iodine and mercuric oxide on (ZEIDLER), 1876, ii., 80.

action of nitrogen peroxide on (LEEDS), 1881, A., 584.

chlorination and iodation of (BOLAS), 1874, 64.

new colouring matters from (PRUD'-HOMME), 1878, A., 78.

combinations of, with the oxides of nitrogen (LIEBERMANN and LINDE-MANN), 1881, A., 99.

derivatives of (PERKIN), 1877, i., 209.

specific and molecular volume of (RAMSAY), 1881, T., 63.

**Anthracene**, derivatives of, conversion of *o*-benzyltoluene-derivatives into (THÖRNER and ZINCKE), 1878, A., 231.

fluorescence in (LIEBERMANN), 1880, A., 665.

nitrate (LIEBERMANN and LINDE-MANN), 1881, A., 99.

synthesis of homologues of (LIEBER-MANN and TOBIAS), 1881, A., 736.

hydrides. See Dihydro- and Hexa-hydro-anthracenes.

isomerides of (GRAEBE), 1873, 175; (SCHMIDT), 1873, 176; (FITTIG and OSTERMAYER), 1873, 177; (BAR-BIER), 1874, 1091.

test for, by the spectroscope (NICKELS), 1880, A., 292, 757.

colour reaction of, with antimony and bismuth trichlorides (SMITH), 1879, A., 831.

estimation of (PAUL and COWNLEY), 1873, 1263; (LUCK), 1874, 291; (ANON.), 1874, 716; (LUCAS), 1875, 287; (DAVIS), 1875, 1057; (NICOL), 1876, ii., 553; (BROWN), 1877, i., 232; (VERSMANN; CASPERS), 1877, i., 347; (BENNETT), 1877, i., 748; (MEISTER, LUCIUS and BRÜNING), 1877, ii., 228.

**Anthracene**, amido-. See Anthramine.

*dibrom*-, *tetrabromide*, action of nitric acid on (CLAUS and HERTEL), 1881, A., 738.

*isodibrom*-, (MILLER), 1877, i., 86.

*tribrom*-, action of nitric acid on (CLAUS and HERTEL), 1881, A., 738.

*tetrabrom*-, *tetrabromide*, and *penta*- and *hexa*-*brom*-, (HAMMERSCHLAG), 1878, A., 76.

*hexa*- and *hepta*-*brom*-, (DIEHL), 1878, A., 429.

*octobrom*-, (MERZ and WEITH), 1878, A., 75; (DIEHL), 1878, A., 429.

*perbrom*-, (FILETI), 1879, A., 655.

*dichlor*-, *tetrabromide* and *dichloride* (SCHWARZER), 1877, ii., 493.

*dichlor*-, *-tetrachloride* (DIEHL), 1878, A., 429.

*dichlor*-, *B-tetrachloride* (LIEBERMANN and LINDEMANN), 1881, A., 99.

*dichloro*-*mono*- and *-di*-*brom*-, (SCHWARZER), 1877, ii., 493.

*tetrachlor*-, (LIEBERMANN and LINDE-MANN), 1881, A., 99.

*hexa*-, *hepta*-, and *octo*-*chlor*-, (DIEHL), 1878, A., 429.

*nitr*-, and its derivatives (SCHMIDT), 1873, 1233; 1874, 581.



- Anthraceneazo***di*brom*di*imidoanthracene, dibrom*di*imido- (CLAUS and DIERNFELLNER), 1882, A., 523.
- Anthracene-blue.** See Alizarin-blue.
- $\beta$ -Anthracenecarboxylic acid** (LIEBERMANN and VOM RATH), 1875, 763.
- $\gamma$ -Anthracenecarboxylic acid**, and its salts (LIEBERMANN and BISCHOF), 1880, A., 399.
- Anthracenedisulphonic acids,  $\alpha$ - and  $\beta$ -** (LIEBERMANN and BOECK), 1879, A., 257; (LIEBERMANN), 1879, A., 537.
- Anthracenesulphonic acid**, and its salts (LIEBERMANN and HOERMANN), 1879, A., 653; 1882, A., 859.
- Anthracenesulphonic acids,  $\alpha$ - and  $\beta$ -** (LINCKE), 1875, 1196.
- Anthrachrysone** (1:3:2':4'-tetrahydroxy-anthraquinone) (SENHOFER and BRUNNER), 1881, A., 266.
- Anthracite**, occurrence of, in an iron mine in Norberg, Sweden (NORDENSTRÖM), 1881, A., 359.  
dust, use of, in Dupuy's process (ANON.), 1879, A., 564.  
See also Coal.
- Anthracylamine.** See Anthramine.
- Anthraflavic acid** ( $\beta$ -anthraflavone; anthraxanthic acid; 2:3'-dihydroxy-anthraquinone) (PERKIN), 1873, 19; (LIEBERMANN), 1873, 275; (BARTH and SENHOFER), 1874, 266; (SCHUNCK and ROEMER), 1876, ii., 88; 1878, A., 77, 510, 984; (ULLRICH and v. PERGER), 1876, ii., 300; (ROSENSTIEHL), 1876, ii., 517, 636; 1878, A., 428; 1879, A., 383.  
*tetranitr-* (*tetranitro- $\beta$ -anthraflavone*) (SCHARDINGER), 1876, i., 584.
- isoAnthraflavic acid** (2:2'-dihydroxy-anthraquinone) (SCHUNCK and ROEMER), 1876, i., 591; ii., 88.  
*tetranitr-* (ROEMER and SCHWARZER), 1882, A., 975.
- $\alpha$ -Anthraflavone.** See *m*-Benzdihydroxyanthraquinone.
- $\beta$ -Anthraflavone.** See Anthraflavic acid.
- Anthramine** (*amidoanthracene*; *anthracylamine*, *anthracenamine*) (PHIPSON), 1873, 641; (LIEBERMANN and HOERMANN), 1882, A., 858; (ROEMER), 1882, A., 974; (LIEBERMANN and BOLLERT), 1882, A., 1105.
- Anthranilic acid** (*o*-amidobenzoic acid) from *o*-nitrotoluene (GRIEFF), 1880, A., 648.  
action of cyanogen on (GRIESS), 1873, 72; 1879, A., 321.
- Anthranilic acid** (*o*-amidobenzoic acid), action of, on pyroracemic acid (BÖTTINGER), 1877, ii., 322.  
hydrochloride of (BEDSON and KING), 1880, T., 755.  
hydrofluoride of (PATERNO and OLIVERT), 1882, A., 613.
- Anthranilic acid, 3:5-dinitr-**, ammonium salt of (SALKOWSKI), 1875, 71.
- Anthranol** (LIEBERMANN and TOPF), 1877, i., 86; 1882, A., 856.
- Anthrapurpurin** ( $\alpha$ -oxyanthraflavone; *isopurpurin*; 1:2:2'-trihydroxy-anthraquinone) (PERKIN), 1873, 425; 1880, T., 557; (SCHUNCK and ROEMER), 1876, ii., 298; (ROSENSTIEHL), 1878, A., 677; 1879, A., 388; (v. PERGER), 1879, A., 255.  
formation of (PERKIN), 1876, i., 857.  
absorption spectra of (PERKIN), 1873, 433.  
reactions of (PERKIN), 1873, 428; 1878, T., 216.  
metallic derivatives of (PERKIN), 1873, 431.  
*isopurpurin* and *flavopurpurin*, actual relations of (MORTON), 1879, A., 943.  
as a dyeing agent (PERKIN), 1873, 433.  
detection of (SCHUNCK and ROEMER), 1880, A., 424.
- Anthrapurpurin, dibrom-** (PERKIN), 1873, 432.
- Anthrapurpurinamide** (PERKIN), 1878, T., 217.
- Anthraquinol.** See Oxanthranol.
- Anthraquinoline** (GRAEBE), 1880, A., 262.
- Anthraquinone** (CLAUS), 1877, ii., 787; (NIETZKI), 1878, A., 154; (THÖRNER and ZINCKE), 1878, A., 231.  
conversion of  $\beta$ -benzoylbenzoic acid into (BEHR and VAN DORP), 1874, 803.  
formation of, in the preparation of benzophenone (KEKULÉ and FRANCHIMONT), 1873, 171.  
preparation of, by the action of chloride of lime solution and a metallic salt on anthracene (HENNIGES), 1877, i., 360.  
direct synthesis of (PICCARD), 1875, 570.  
constitution of (v. PECHMANN), 1880, A., 323.  
electrolysis of (GOPPELSROEDER), 1876, ii., 308.  
distillation of, with soda-lime (GRAEBE), 1873, 635.  
and its derivatives, reduction of (LIEBERMANN and TOPF), 1882, A., 855.

- Anthraquinone**, derivatives of (v. PERGER), 1879, A., 253; (LIEBERMANN), 1881, A., 100; (CLAUS and HERTEL), 1881, A., 737.  
 synthesis of, from benzene derivatives (v. BAeyer and CARO), 1875, 66.  
*dichloride* (THÖRNER and ZINCKE), 1878, A., 231.  
 isomeride of (SCHÜTZENBERGER), 1873, 388.
- Anthraquinone**,  $\alpha$ -amido- (BÜTTGER and PETERSEN), 1873, 389; (CLAUS and HERTEL), 1881, A., 737; (CLAUS and DIERNFELLNER), 1882, A., 523.
- 2-amido-** (LIEBERMANN and HOERMANN), 1882, A., 860.  
 from anthraquinonesulphonic acid (v. PERGER), 1880, A., 49.
- $\alpha$ -diamido- (CLAUS and HERTEL), 1881, A., 738.
- $\beta$ -diamido- (SCHMIDT), 1874, 987.
- 1:2-diamido-** (*alizarindiamide*) (v. PERGER), 1879, A., 254, 724.
- 1-brom-** (v. PECHMANN), 1880, A., 323.
- $\alpha$ - and  $\beta$ -dibrom-, preparation and decomposition of (PERKIN), 1880, T., 555.  
 colouring matters derived from (PERKIN), 1880, T., 554.
- tri-, tetra- and penta-brom-* (DIEHL), 1878, A., 430.
- tetrabrom-* (HAMMERSCHLAG), 1878, A., 76.
- pentabrom-* (MERZ and WEITH), 1878, A., 75.
- dibromamido-* (CLAUS and DIERNFELLNER), 1882, A., 523.
- bromonitr-, and tetrabromodinitr-* (CLAUS and HERTEL), 1881, A., 738.
- bromodinitr-, dibromonitr-, and dibromonitramido-* (CLAUS and DIERNFELLNER), 1882, A., 522.
- tri-, tetra- and penta-ehlor-* (DIEHL), 1878, A., 429.
- $\alpha$ -nitr- (BÜTTGER and PETERSEN), 1873, 389; (CLAUS and HERTEL), 1881, A., 737.
- $\alpha$ -dinitr- (CLAUS and HERTEL), 1881, A., 737.
- $\beta$ -Anthraquinonecarboxylic acid** (LIEBERMANN), 1877, i., 610; (NIETZKI), 1878, A., 154; (HAMMERSCHLAG), 1878, A., 323.
- Anthraquinonechrysene**, *dinitr-*, preparation of (SCHMIDT), 1874, 581, 987.
- Anthraquinonedicarboxylic acid** (WACHENDORFF and ZINCKE), 1878, A., 232.
- Anthraquinonedimethylamidophenylsulphone**. See Anthraquinone-2-sulphonic acid, dimethylanilide of.
- Anthraquinonedisulphonic acid**, synthesis of (LIEBERMANN), 1874, 1097.
- Anthraquinonesulphonic acid**, action of potash on (v. PERGER), 1879, A., 724; (LIEBERMANN and DEHNST), 1879, A., 943.  
 reduction of (LIEBERMANN and HOERMANN), 1882, A., 858.  
 amide and anilide, chloride and dimethylanilide (*anthraquinonedimethylamidophenylsulphone*) of (MACHOUL), 1881, A., 52.
- Anthraquinonesulphonic acid**,  $\alpha$ - and  $\beta$ -amido-, and  $\alpha$ - and  $\beta$ -nitr- and their salts, and the action of reducing agents and sulphuric acid on (CLAUS), 1882, A., 1105.
- Anthraquinonesulphonic acids**, action of ammonia on (BOURCAET), 1880, A., 263.  
 reduction of (LIEBERMANN), 1879, A., 537.  
 sodium salts of (LIEBERMANN and DEHNST), 1879, A., 942.
- Anthrarufin** (*1:4'-dihydroxyanthraquinone*) from *1:1'-anthracenedisulphonic acid* (LIEBERMANN and BOECK), 1879, A., 257; (LIEBERMANN), 1879, A., 260, 537.  
 from hydroxybenzoic acid (SCHUNCK and KOENER), 1878, A., 984.  
 constitution of (LIEBERMANN and DEHNST), 1879, A., 942.
- tetranitr-* (LIEBERMANN), 1879, A., 538.
- Anthraxanthic acid**. See Anthraflavic acid.
- Anthriscus Cerefolium*, occurrence of ethyl compounds in the unripe fruit of (GUTHZEIT), 1875, 1248.
- Anthrol** (LIEBERMANN and HOERMANN), 1879, A., 653; 1882, A., 858; (LIEBERMANN and SIMON), 1882, A., 857.  
 ethyl and methyl ethers and *dinitr-* (LIEBERMANN and HAGEN), 1882, A., 1212.
- Anthrols**,  $\alpha$ - and  $\beta$ - (LINCKE), 1875, 1196.
- Anthrone**, *dinitr-*, and *nitronitroso-* (LIEBERMANN and LANDSHOFF), 1881, A., 607.  
*nitroso-* (LIEBERMANN and LINDEMANN), 1881, A., 99; (LIEBERMANN and LANDSHOFF), 1881, A., 607.
- Antichlors** (SCHUCHARDT), 1874, 718; (LUNGE), 1879, A., 676.
- Antifebrin**. See Acetanilide.

**Antiferments.** See Antiseptics.

**Antimonic acid.** See Antimony oxide.

**Antimonite.** See Stibnite.

**Antimonous chloride.** See Antimony trichloride.

oxide. See Antimony oxides.

sulphide. See Antimony trisulphide.

**Antimony,** native (FRENZEL), 1878, A., 708.

from Nova Scotia (HOW), 1876, ii., 55.

red. See Kermesite.

explosive (PFEIFER), 1882, A., 467.

allotropic condition of (SCHÜTZENBERGER), 1878, A., 840.

atomic weight of (SCHNEIDER), 1879, A., 354; 1881, A., 78; (KESSLER), 1879, A., 772; 1880, A., 299; (COOKE), 1880, A., 300, 704; 1881, A., 512; 1882, A., 367.

evolution of, from stibnite by nascent hydrogen (SKEY), 1877, i., 174.

electro-chemical deposition of (BERTRAND), 1877, i., 161.

recovery of (HERING), 1879, A., 491.  
determination of the specific volume of (THORPE), 1880, T., 387.

artificial crystals of (LASPEYRES), 1874, 1063.

crystalline, formation of (ANON.), 1873, 1007.

occluded hydrogen in so-called explosive (BÖTTGER), 1876, ii., 48.

oxidation of hydrochloric acid solutions of, in the atmosphere (COOKE), 1881, A., 513.

**Antimony alloys** with lead (DE JUSSIEU), 1879, A., 889.

action of hydrochloric and sulphuric acids on (V. DER PLANITZ), 1875, 428; 1876, i., 45.

**Antimony compounds,** decomposition of (DONATH), 1880, A., 348.

**Antimony tribromide** (MACIVOR), 1874, 1064.

trichloride (*antimonous chloride*), electrolysis of solutions of (PFEIFER), 1882, A., 467.

action of, on azobenzene (BOGDANOFF), 1877, ii., 325.

action of, on benzene, on toluene, and on naphthalene (SMITH), 1876, ii., 30; 1877, ii., 551; 1879, T., 309; (SMITH and DAVIS), 1882, T., 411.

decomposition of (MACIVOR), 1876, i., 192.

compound of, with mercaptan (CLAËSSON), 1877, ii., 296.

as a test for cesium salts (GODEFROY), 1874, 816.

**Antimony pentachloride,** solidification of (KAMMERER), 1875, 1163.

action of, on phosphorus trichloride (KÖHLER), 1880, A., 613.

action of, on some organic compounds (LÖSSNER), 1876, ii., 282.

compounds of, with alcohols and with ether (WILLIAMS), 1876, ii., 463.

phosphorus decachloride, Weber's (KÖHLER), 1880, A., 613.

oxychloride (DAUBRAWA), 1877, ii., 406.

triiodide (MACIVOR), 1874, 870; 1876, i., 328.

boiling point of (COOKE), 1882, A., 354.

oxyiodide (MACIVOR), 1876, i., 330.

oxide, discovery of, in extensive lodes at Sonora, Mexico (COX), 1881, A., 518.

antimonous oxide, vapour density of (V. and C. MEYER), 1879, A., 875.

isodimorphism of (GAENGE), 1881, A., 791.

oxides. See also Cervantite, Valentinite.

antimonous acid (CLARKE and STALLO), 1881, A., 157.

in a Vesuvian product (FREDA), 1881, A., 518.

antimonic acid, constitution of (CONRAD), 1880, A., 94.

antimonic acids (DAUBRAWA), 1877, ii., 406.

phosphide (RAMSAY), 1874, 339.

trisulphide (*antimonous sulphide*), action of alkaline carbonates and alkaline earths on (TERREIL), 1874, 339; (WEPPEN), 1875, 735.

action of cupric and of cuprous chlorides on (RAMMELSBERG), 1881, T., 378.

See also Stibnite.

**Antimony, estimation and separation:—**

estimation of (HOUSSEAU), 1873, 407; (BARTLEY), 1876, i., 748; 1877, ii., 222; (BECKER), 1878, A., 753.

estimation of tin and (WELLER), 1882, A., 1324.

estimation, volumetric, of, in presence of tin (HERFORD), 1882, A., 661.

estimation of, in alloys (BARTLEY), 1876, i., 748; 1877, ii., 222.

separation of, from arsenic, by Bunsen's method (NILSON), 1877, ii., 922; 1879, A., 1058.

separation of, from arsenic and tin (WINKLER), 1876, i., 748.

**Antimony, separation:—**

separation of, from tin (DEWEY), 1880, A., 289; (WELLER), 1882, A., 1324.

separation of, from tungsten (COBENZL), 1881, A., 1171.

**Antimony glance.** See Stibnite.**Antimony ochre.** See Cervantite.**Antiseptics** (PETIT), 1873, 84; (BOILLAT), 1882, A., 1243.

acids as (SIEBER), 1880, A., 72.

calcium iodate as an (SONSTADT), 1874, 394.

potassium xanthate as an (ZÖLLER), 1877, ii., 954.

pyrogallol as an (BOVER), 1880, A., 73.

carbon disulphide as an (ZÖLLER), 1876, ii., 346, 679; (SCHIFF), 1877, i., 124.

coal tar oils, heavy, as (DUSART), 1874, 1189.

oxidised oil of turpentine as an (KINGZETT), 1877, i., 184.

salicylic and benzoic acids as, for beer-worts and urine (v. MEYER and KOLBE), 1876, i., 959.

**Apatite** (CHURCH), 1873, 101; (PETERSEN), 1873, 735; (BOHICKÝ), 1874, 236; (DOELTER), 1878, A., 391; (VOM RATH), 1881, A., 550.

from Canada (HOFFMANN), 1881, A., 525.

from Ottawa Co., Quebec (HARRINGTON), 1881, A., 542.

from Norway (BRÖGGER and REUSCH), 1876, ii., 51.

from Untersulzbach (TSCHERMAK), 1876, ii., 53.

in dolerite (v. SANDBERGER), 1874, 559.

in osteolite (PETERSEN), 1874, 450.

bromine and iodine in (KUHLMANN), 1873, 357.

microscopical detection of (STRENG), 1877, ii., 411.

analyses of (COSSA), 1879, A., 695.

containing manganese, analyses of (PENFIELD), 1881, A., 364.

See also Calcium phosphate.

**Aphrodite** (FISCHER), 1881, A., 990.**Aphrosiderite** (NIES), 1873, 1115; 1875, 1166.**Aphthitalite** (*aphthalose*; *arcanite*) from Racalmuto in Sicily (SCACCHI), 1875, 1244.**Apiin** (v. GERICHTEN), 1876, ii., 533; (WHITNEY), 1880, A., 413.**Apiole** (v. GERICHTEN), 1877, i., 326; (WHITNEY), 1880, A., 412.**Apnœa**, the blood of (EWALD), 1873, 1247.**Apo-compounds.** See under word to which apo is prefixed.**Apophyllenic acid** (v. GERICHTEN), 1881, A., 110; 1882, A., 313.

brom-, and its salts (v. GERICHTEN), 1882, A., 314.

See also Cinchomeronic acid.

**Apophylline**, *dibrom-*, and its derivatives (v. GERICHTEN), 1882, A., 1109.**Apophyllite** of the Radanthal (LUEDECKE), 1878, A., 945.

formation of, from wollastonite (STRENG), 1875, 744.

crystallography of (SELIGMANN; RUMPF), 1881, A., 397.

**Apparatin** (GERARD), 1876, i., 136.**Apparatus** for the treatment of substances in open dishes by volatile solvents (BLYTH), 1880, T., 140.**Apple**, bitter (*Citrullus Colocynthis*), as an article of food (FLÜCKIGER), 1873, 649.**Apples**, gas contained in (BENDER), 1875, 661.

ripening of, after gathering (PORTELE), 1880, A., 179.

estimation of sugars and acid in 37 varieties of eating, and six varieties of cider (TRUELLE), 1877, ii., 514.

**Apple tree**, alcoholic fermentation in the roots of (VAN TIEGHEM), 1881, A., 115.**Apple wine** (MADER), 1879, A., 1078.**Aqua regia** and the nitrosyl chlorides (TILDEN), 1874, 630.**Aqueous vapour.** See Water vapour.**Arabin** (*arabic acid*), presence of, in the sugar-beet (SCHEIBLER), 1873, 1124.

**Metarabin** (GREENISH), 1881, A., 443.

**Pararabin** (REICHARDT), 1875, 1179.

**Arabinose** (SCHEIBLER), 1873, 1124; (CLAËSSON), 1881, A., 795; 1882, A., 819; (KILIANI), 1882, A., 591.

identity of, with lactose (KILIANI), 1881, A., 243.

**Arable soils and land.** See Agricultural Chemistry.**Arachidic acid** from erucic and brassica acids (GOLDSCHMIEDT), 1878, A., 28.

derivatives of (TASSINARI), 1879, A., 307.

**Arachis hypogœa.** See Earth-nut under Agricultural Chemistry.**Aragonite** (BOHICKÝ), 1874, 236.

from Oberstein on the Nahe (LASPEYRES), 1878, A., 207.

from Sasbach (SCHRAUF), 1873, 857.

pseudomorph of, after gypsum (GEINITZ), 1877, i., 698.



- Aragonite**, pseudomorphs of calcite after (VOM RATH), 1880, A., 15.  
See also Calcium carbonate.
- Aralia spinosa** (HOLDEN), 1881, A., 105.
- Araliin** and **araliretin** (HOLDEN), 1881, A., 106.
- Arbutin**. See Glucosides.
- Arcanite**. See Aphthitalite.
- Archenite**, analyses of (ENGSTRÖM), 1878, A., 115.
- Archil** (*orchil*), detection of, in wines (HAAS), 1882, A., 1006.  
extract, and archil paste, preparation of (SEROZ and CHOIGNARD), 1876, ii., 451.  
lichens, volumetric estimation of orcinol in (REYMANN), 1875, 1293.
- Arctolite** (BLOMSTRAND), 1881, A., 1006.
- Arctostaphylos glauca**, analysis of (FLINT), 1874, 598.
- Ardennite** (v. LASAULX), 1873, 854; 1874, 879; 1877, i., 54.  
separation of vanadic acid from alumina and ferric oxide in (BERTENDORF), 1877, ii., 175.
- Arfvedsonite**, and some allied minerals, chemical composition of (DOELTER), 1881, A., 552.  
from El Paso Co., Colorado (KÖNIG), 1878, A., 389.
- Argentite** and **argentous compounds**.  
See under Silver.
- Argentopyrite** (*silberkies*) (WEISBACH), 1880, A., 14.
- Argol** (WASHINGTON), 1875, 958.  
inferior, estimation of tartaric acid in (GROSJEAN), 1879, T., 341.  
See also Tartaric acid, potassium-hydrogen salt of.
- Argyropyrites** (WEISBACH), 1878, A., 380.
- Aricine**. See under Alkaloids.
- Arnica-root**, constituents of (SIGEL), 1874, 377.
- Aromatic acids**. See Acids, aromatic.  
aldehydes. See Aldehydes, aromatic.  
amines. See Amines, aromatic.  
bases. See Bases, aromatic.  
compounds. See Compounds, aromatic.  
hydrocarbons. See Hydrocarbons, aromatic.  
series, molecular changes in the (DEMOLE), 1875, 253.  
volumes of some compounds of (RAMSAY), 1881, T., 63.  
orientation in; reclamation (HÜBNER), 1875, 887.
- Arsenargentite** (HANNAY), 1878, A., 15.
- Arsenic**, native (FRENZEL), 1878, A., 708.  
crystals of, from Joachimsthal (v. ZEPHAROVICH), 1875, 625.  
from Mexico (BURKART), 1875, 551.  
in iron-pyrites (HJELT), 1878, A., 173.  
amount of, in pyrites, and its distribution in acid and alkali manufacture (SMITH), 1873, 417.  
use of baryta to obtain, from arsenious oxide and arsenic sulphides (BRAME), 1881, A., 467.  
phosphorescence of (JOUBERT), 1874, 1059.  
specific volume of (THORPE), 1880, T., 387.  
volatilising point of (CONECHY), 1880, A., 705.  
action of sulphur on (GÉLIS), 1873, 843.  
removal of, from hydrochloric acid (HAGER), 1874, 868.  
removal of, from sulphuric acid (THORN), 1876, i., 517; (WAGNER), 1876, ii., 48, 122.  
presence of, in the atmosphere (FLECK), 1873, 421; (HAMBERG), 1875, 103; (BARTLETT), 1880, A., 585.  
in grape-sugar (CLOÛET; RITTER), 1879, A., 1077.  
in tapers (CHURCH), 1877, ii., 922.  
in commercial caustic soda (DONATH), 1881, A., 856.  
in sulphuric acid made from arseniferous pyrites, and in the soda salts manufactured from this acid (HJELT), 1878, A., 173.  
influence of, on animals (GIES), 1880, A., 907.  
distribution of, in the animal body (JOHNSON and CHITTENDEN), 1881, A., 1082.  
distribution of, in the animal organism after administration of arsenious anhydride (LUDWIG), 1882, A., 416.  
localisation of, in the tissues of poisoned animals (SCOLOSUBOFF), 1876, i., 92.  
action of, on the chemical change (metabolism) of albumins (v. BOECK), 1877, ii., 912.  
action of, in feeding and on nitrogen changes (WEISKE), 1876, i., 948.  
theory of the physiological action of (BINZ and SCHULZ), 1880, A., 174; 1882, A., 242; (DOGIEL), 1882, A., 987; (SCHULZ), 1882, A., 1223.  
a compound of, with chromium (NEVILLE), 1877, i., 283.

**Arsenic compounds** (JANOVSKY), 1876, i., 681.  
 decomposition of (DONATH), 1880, A., 348.  
 absorption of chlorine by (SLOAN), 1882, A., 19.  
**Arsenic trichloride** (*arsenious chloride*), physical properties of (THORPE), 1880, T., 352.  
 action of nitrogen tetroxide on (GEUTHER), 1874, 539.  
*trifluoride* (*arsenious fluoride*) (MAC IVOR), 1875, 239.  
 preparation and physical properties of (THORPE), 1880, T., 351.  
*trihydride* (*arsine*, *arsenuretted hydrogen*) (JANOVSKY), 1873, 842; (ENGEL), 1874, 442.  
 explosion of (BERTHELOT), 1882, A., 454.  
 action of, on sulphur (JONES), 1876, i., 648.  
 arsenides, crystallographical and chemical relations between natural sulphides, thioarsenides and (RAMMELSBERG), 1874, 547.  
 metallic (DESCAMPS), 1878, A., 705.  
 law of volumes in (SCHRÖDER), 1878, A., 929.  
 iodide (BABCOCK), 1876, i., 191.  
 iodides (BAMBERGER and PHILIPP), 1882, A., 367.  
 oxides :—  
 arsenious oxide, isodimorphism of (GAENGE), 1881, A., 791.  
 arsenic pentoxide, vapour density of (V. and C. MEYER), 1879, A., 767, 875.  
 arsenious acid, heat of formation of (THOMSEN), 1875, 32.  
 neutralisation phenomena and basicity of, in aqueous solution (THOMSEN), 1874, 1136.  
 solubility of, in water (BUCHNER), 1873, 1006.  
 oxidation of (BERTHELOT), 1877, ii., 841.  
 compound of iodine with (ZINNO), 1874, 130; (WEGNER), 1875, 133.  
 magnesia as an antidote for (DE CLERMONT and FROMMEL), 1879, A., 77.  
 thio-, salts of (NILSON), 1876, ii., 481.  
 method for the estimation of, in the presence of arsenic acid (MAYER), 1881, A., 195.  
 arsenic acid, heat of formation of (THOMSEN), 1875, 32.

**Arsenic oxides :—**

arsenic acid, action of, on the sodium salts of tungstic acid (LEFORT), 1882, A., 702.  
 compounds of, with molybdic acid (DEBRAY), 1874, 964.  
 iod-, behaviour of compounds of with basic oxides and alkaline bodies (ZINNO), 1874, 130.  
 estimation of (STOLBA), 1877, ii., 355; (NAYLOR), 1880, A., 421.  
 estimation, volumetric, of, by uranium solution (BRÜGELMANN), 1877, i., 741.  
 separation of, from its salts (CLASSEN), 1879, A., 972.  
 arsenates, a series of (FILHOL and SENDERENS), 1881, A., 1104.  
 from Joachimsthal (SCHRAUF), 1881, A., 532.  
 mineral, and mineral phosphates (CHURCH), 1873, 101.  
 neutral to litmus (FILHOL and SENDERENS), 1882, A., 1267.  
**Arsenic trisulphide** (*arsenious sulphide*) (NILSON), 1876, ii., 480.  
 action of cupric chloride on (RAMMELSBERG), 1881, T., 378.  
 behaviour of, with iodine at high temperatures (SCHNEIDER), 1881, A., 686.  
 as a poison, and its importance in judicial cases (OSSIKOWSKY), 1881, A., 123.  
 sulphides and their compounds (NILSON), 1876, i., 343; ii., 480.  
 See also Orpiment and Realgar.  
 arsenites, thio- (NILSON), 1876, ii., 482.  
**Arsenic compounds, aromatic** (MICHAELIS), 1876, i., 610; 1877, i., 311; ii., 452; (LA COSTE and MICHAELIS), 1879, A., 161; 1880, A., 396; (LA COSTE), 1881, A., 168, 903.  
 mercaptides (CLAËSSON), 1877, ii., 295.  
 thiocyanate (MIQUEL), 1877, ii., 872.  
**Arsenic, detection, estimation, and separation :—**  
 detection of (GATEHOUSE), 1873, 942; (NEUBAUER), 1873, 943; (VOGEL), 1873, 943; (HAGER), 1873, 943, 1057; (SELM), 1873, 1165; (MAYENCON and BERGERET), 1874, 1008; (DAVY), 1876, i., 754; (JOHNSON), 1879, A., 277; (BOEKE), 1880, A., 752; (FISCHER), 1881, A., 195; (REICHARDT), 1881, A., 195.  
 Fresenius-Babo's test for (FRESENIUS), 1882, A., 555.

**Arsenic, detection, estimation, and separation:—**  
 Hager's test for, comparison of the action of sodium amalgam and of zinc as reagents for (JANDOUSCH), 1878, A., 243.  
 detection of, in salts of the alkalis or alkaline earths used in pharmacy (PATROUILLARD), 1876, i., 110.  
 detection of, in green-tinted envelopes (VOGEL), 1873, 943.  
 detection of, in organic matter (CHITTENDEN and DONALDSON), 1881, A., 648.  
 detection of, in phosphoric acid (HAGER), 1873, 940.  
 detection of, in sublimed sulphur and in washed flowers of sulphur (HAGER), 1874, 1008.  
 detection of, in wines which have been artificially coloured with magenta (HUSSON), 1876, ii., 667.  
 chemical toxicology of (SELM), 1881, A., 311.  
 detection of, in cases of poisoning (KAISER), 1876, i., 754.  
 estimation of (RAMMELSBERG), 1874, 814; (BOEKE), 1880, A., 752; (FISCHER; REICHARDT), 1881, A., 195; (HAGER), 1882, A., 99.  
 estimation, volumetric, of (HOUEAR), 1873, 407; (CHAMPION and PELLET), 1877, i., 739; (MILLOT and MAQUENNE), 1878, A., 915.  
 estimation of, as magnesium pyroarsenate (WOOD), 1874, 1100; (MACIVOR), 1876, i., 756; (BRAUNER), 1877, ii., 222; (REICHEL), 1881, A., 467.  
 estimation of, in copper (SEXTON), 1882, A., 1135.  
 estimation of, in iron pyrites (HJELT), 1878, A., 174.  
 estimation of very small quantities of, in mineral and organic substances (CROMMYDIS), 1876, ii., 114.  
 estimation of, in organic matter (CHITTENDEN and DONALDSON), 1881, A., 648.  
 estimation of, in organic substances and in vegetable and animal compounds (BRÜGELMANN), 1877, i., 739.  
 estimation of, in various tissues (GAUTIER), 1876, i., 110.  
 estimation of, in wines which have been artificially coloured with magenta (HUSSON), 1876, ii., 667.  
 separation of (FISCHER; REICHARDT), 1881, A., 195.

**Arsenic, separation:—**

separation of, from other metals (DE CLERMONT and FROMMEL), 1878, A., 608.  
 separation of, from antimony by Bunsen's method (NILSON), 1877, ii., 922; 1879, A., 1058.  
 separation of, from nickel and cobalt (WÖHLER), 1877, ii., 573.  
 separation of, from tungsten (COBENZL), 1881, A., 1171.  
 separation of, from animal matters (GAUTIER), 1876, i., 110.  
**Arsenic glance.** See Arsenolamprite.  
**Arsenical pyrites.** See Mispickel.  
**Arsenical residues** of the manufacture of aniline colours, process for rendering innocuous (WINKLER), 1877, ii., 377.  
**Arseniferous uranium mica** (*zinnerite*) from Joachimsthal (LAUBE), 1873, 1010.  
**Arsenious anhydride.** See Arsenious oxide under Arsenic.  
 chloride. See Arsenic trichloride.  
 fluoride. See Arsenic trifluoride.  
 sulphide. See Arsenic trisulphide.  
**Arsenobenzene** and its iodo-derivative (MICHAELIS and SCHULTE), 1881, A., 722.  
**Arsenomolybdic acid** (SEYBERTH), 1874, 776.  
**Arsenotungstates** (GIBBS), 1877, ii., 848.  
**Arsenolamprite** (*arsenic glance*) (FRENZEL), 1873, 850; 1874, 1141.  
**Arsenonaphthalene** (MICHAELIS and SCHULTE), 1881, A., 723.  
**Arsenosiderite.** See Leucopyrite.  
**"Arsen-wismuth"** (WEISBACH), 1878, A., 116.  
**Arsinobenzoic acid**, and its salts (LA COSTE), 1881, A., 168, 903.  
**Arsonium compounds**, constitution of (MICHAELIS and LINK), 1882, A., 305.  
*Artemisia absinthium.* See Wormwood.  
**Artichoke**, Jerusalem, influence exerted on the growth of, by allowing the "sets" to decay before planting (KRAUS), 1881, A., 456.  
 carbohydrates of (DIECK and TOLLENS), 1879, A., 778; 1880, A., 619.  
*Artocarpus speciosus*, examination of (MOELLER), 1879, A., 860.  
**Asafœtida** (FLÜCKIGER), 1876, i., 431.  
**Asbestos** from Canada (KNOPS), 1882, A., 116.  
 containing sodium (BAUER), 1882, A., 475.  
**Asbolite** (ROSTER), 1878, A., 281.

- Ascitic fluids**, nature of (BIROT), 1875, 374.
- Ash** of light-coloured cod liver oil (VAN DER BURG), 1881, A., 124.  
 detection of manganese as phosphate in (CAMPANI), 1877, ii., 223.  
 See also Agricultural Chemistry.
- Asparagine**, distribution and functions of, in the vegetable kingdom (BORODIN), 1880, A., 58.  
 in young leaves (SCHULZE and BARBIERI), 1882, A., 1195.  
 in lupine shoots (SCHULZE and UMLAUT), 1875, 1284.  
 formation of, in germinating peas (SACHSSE and KORMANN), 1874, 1001.  
 in plants (VINES), 1878, T., 386.  
 formation of, during the germination of vetches (v. GORUP-BESANEZ), 1874, 494, 912.  
 in the sugar-liquors from beets and canes; its influence on the saccharimetric determination (CHAMPION and PELLET), 1876, ii., 215.  
 rotatory power of (LANDOLT), 1881, A., 257.  
 optical rotatory power of, in different solvents (BECKER), 1881, A., 801.  
 destruction of the rotatory power of (CHAMPION and PELLET), 1876, ii., 215.  
 action of bromine and of urea on (GUARESCHI), 1875, 1256; 1877, i., 457.  
 action of methylic iodide on (GRIESS), 1880, A., 315.  
 of Leguminosae, supposed transformation of, into an albuminoid (MERCADANTE), 1875, 900.  
 relation of, to protein (SACHSSE), 1877, ii., 199.  
 nutritive value of (WEISKE, SCHRODT, and v. DANGEL), 1880, A., 330, 485.  
 relation of, to animal nutrition (WEISKE), 1882, A., 986.  
 physiological relations of (PORTES), 1877, ii., 636.  
 body resembling, in vetch seeds (RITTHAUSEN), 1874, 701.  
 derivatives (GUARESCHI), 1878, A., 138.  
 estimation of (SACHSSE), 1873, 652; (MEUNIER), 1881, A., 761.  
 estimation of, in plants (SCHULZE and BARBIERI), 1881, A., 313.  
 estimation of, in potatoes (SCHULZE and BARBIERI), 1878, A., 330.
- Asparagus**, sugar in (VOGEL), 1874, 176.  
 abnormal constituents of urine after eating (HILGER), 1874, 595.
- Aspartic acid** in the young shoots of the gourd (SCHULZE and BARBIERI), 1878, A., 663.  
 produced by oxidation of conglutin with potassium permanganate (PORT), 1873, 628.  
 formation of, in pancreatic digestion (RADZIEJEWSKI and SALKOWSKI), 1875, 375.  
 a product of the artificial digestion of gluten by the pancreatic gland (v. KNIERIEM), 1876, i., 724.  
 constitution of (GUARESCHI), 1877, i., 457.  
 rotatory power of (LANDOLT), 1881, A., 257.  
 optical rotatory power of, in different solvents (BECKER), 1881, A., 801.  
 action of urea on (GUARESCHI), 1875, 1256.
- Aspergillus niger*, influence of metallic salts on the growth of (ANON.), 1873, 648.
- Asphalt** and other retinalites (HELM), 1879, A., 301.  
 its extraction, preparation, and uses (VIDEKY), 1873, 660.  
 Syrian and American (HELM), 1879, A., 896.  
 See also Bitumen.
- Aspidium rigidum* (BOWMAN), 1881, A., 1152.
- Aspidosamine** and **aspidospermatine** (HESSE), 1882, A., 743.
- Asidosperma Quebracho*, alkaloids of (HESSE), 1881, A., 294; 1882, A., 742.
- Aspidospermine** and its salts (FRAUDE), 1879, A., 470; 1880, A., 54; (WULFSBERG), 1881, A., 108; (HESSE), 1881, A., 294; 1882, A., 742.  
 supposed identity of, with paytime (ARATA), 1881, A., 622.
- Aspirators** (LASNE), 1873, 837; (LUX), 1881, A., 192.
- Assaying**, use of bromine in (WAGNER), 1876, i., 741; ii., 214.  
 use of electrometallurgy in (ANON.), 1876, ii., 115.
- Assimilation** theoretically considered (REINKE), 1882, A., 1312.
- Aster Amellus*, analysis of the ash of the various parts of (COUNCLER), 1882, A., 887.
- Astrophyllite** from El Paso Co., Colorado (KÖNIG), 1878, A., 389.
- Atacamite** (LUDWIG), 1873, 1010; (CLOUD), 1877, i., 284; (BURGHARDT), 1879, A., 17; (LIVERSIDGE), 1881, A., 991.  
 from Australia, analysis of (CABELL), 1874, 345.



**Atacamite** from South Australia (v. ZEPHAROVICH), 1874, 555.  
 from Chili (VOM RATH), 1881, A., 551.  
 artificial production of (FRIEDEL), 1873, 1107.  
 and the corresponding oxychloride of copper, thermic relations of, and the action of dilute potash on (BERTHELOT), 1881, A., 7.  
**Atisine** (WRIGHT and LUFF), 1878, T., 335.  
**Atmography** (EDER), 1882, A., 1008.  
**Atmospheric air**, band-spectrum of (GOLDSTEIN), 1882, A., 677.  
 new property of (COULIER), 1876, i., 186.  
 action of induced electricity on (BÖTTGER), 1874, 653.  
 thermal conductivity and diathermancy of (BUFF), 1878, A., 261; (TYNDALL), 1881, A., 966.  
 specific heat of (KURZ), 1874, 865; 1875, 38.  
 highly rarefied, heat conduction in (CROOKES), 1881, A., 966.  
 the constituent of, which absorbs radiant heat (HILL), 1882, A., 566.  
 action of, in rendering the flame of the Bunsen lamp non-luminous (BLOCHMANN), 1882, A., 129.  
 compressibility of (MENDELÉEFF and KIRPITSCHOFF), 1874, 757.  
 compressibility of, at high temperatures (AMAGAT), 1873, 239; 1881, A., 1094.  
 diffusion between moist and dry, through a porous diaphragm (DUFUR), 1874, 758; 1876, ii., 42; (v. REUSCH), 1875, 127.  
 condensation of, on the surface of platinum (SMITH), 1875, 480.  
 condensation of a mixture of steam and, upon cold surfaces (REYNOLDS), 1873, 1001.  
 explosive mixtures of, with combustible powders (BERTHELOT), 1879, A., 412.  
 saturation of, with water vapour, and drying of (DIBBITS), 1876, ii., 379.  
 process for cooling large quantities of, by contact with a cooled liquid (MIGNON and ROUART), 1876, i., 335.  
 cooling power of (WITZ), 1881, A., 341.  
 presence of ferments in (MIQUEL), 1878, A., 680; 1879, A., 394; 1880, A., 727; (MIFLET), 1880, A., 727.  
 lower organisms in (HANSEN), 1880, A., 908.

**Atmospheric air**, action of bacteria on (HATTON), 1881, T., 248.  
 rapidity of germ-diffusion in (SOYKA), 1880, A., 515.  
 influence of, on fermentation (HANSEN), 1880, A., 819.  
 influence of compressed, on fermentation (BERT), 1876, i., 93.  
 action of ozone on germs in (CHAPUIS), 1881, A., 632.  
 employment of compressed, in filtering solutions (v. LEUBE), 1877, i., 270.  
 hot, warming with (KAYSER), 1878, A., 250.  
 disinfection by the aid of (KOCH and WOLFFHÜGEL), 1882, A., 1143.  
 ferruginous particles in (TISSANDIER), 1876, i., 353; (TACCHINI), 1879, A., 515; 1880, A., 709.  
 grains of silica and micrococci in (PHIPSON), 1881, A., 645.  
 presence of nickel in (TISSANDIER), 1876, ii., 614.  
 action of, on peaty water (HALCROW and FRANKLAND), 1880, T., 506.  
 action of moist phosphorus on (LEEDS), 1879, A., 881; 1880, A., 699, 847; 1881, A., 506.  
 composition of (v. JOLLY), 1880, A., 85, 698; (MORLEY), 1880, A., 90, 698; 1882, A., 278, 1025.  
 composition of, at different heights (MENDELÉEFF), 1876, ii., 181.  
 accurate and rapid method for analysis of (MORLEY), 1882, A., 335.  
 in the soil and in dwelling-houses, composition of (FORSTER), 1876, ii., 213.  
 of hospitals during yellow-fever (VAN SLOOTEN), 1881, A., 1179.  
 of Palermo, analyses of (MACAGNO), 1880, A., 697.  
 contained in sea-water (TORNÖE), 1879, A., 1060.  
 ammonia in (SCHLÖSING), 1875, 663; (LÉVY), 1880, A., 848.  
 ammonia in, at different heights (TRUCHOT), 1874, 223.  
 of Montsouris, estimation of ammonia in (LÉVY), 1877, ii., 509; 1878, A., 243.  
 estimation of organic carbon in (DUPRÉ and HAKE), 1881, T., 93.  
 of rooms, carbonic oxide in (ANON.), 1881, A., 318.  
 carbonic anhydride in (HENNEBERG), 1873, 595; (TRUCHOT), 1874, 19; (TISSANDIER), 1875, 1051; (MUIR), 1876, i., 679; (v. PETTENKOFER),

- 1876, i., 891; (FITZBOGEN and HASSELBARTH), 1876, ii., 58; 1880, A., 699; (FARSKÝ), 1878, A., 164; (HESSE), 1878, A., 605; 1879, A., 78; (DUPRÉ and HAKE), 1879, T., 168; (REISER), 1879, A., 744; 1880, A., 605; 1881, A., 19; (MARIÉ-DAVY), 1880, A., 334, 788; (KAPUSSTIN), 1880, A., 420; 1881, A., 204; (SCHLESING), 1881, A., 19; (MEUNIER), 1881, A., 72; (MÜNTZ and AUBIN), 1881, A., 468, 875; 1882, A., 361; (ARMSTRONG), 1881, A., 974; (DUMAS), 1882, A., 692; (RISLER), 1882, A., 1026; (MASCART), 1882, A., 1137.
- Atmospheric air** collected by the balloon "Le Zenith," estimation of carbonic acid in (TISSANDIER), 1875, 1051.
- carbonic anhydride in, at Calèves, near Nyon, Switzerland (RISLER), 1882, A., 1026.
- of the Libyan desert, amount of carbonic anhydride in the (v. PETTENKOFER), 1876, i., 891.
- of the soil of Munich, carbonic anhydride in, at different depths and at different times (v. PETTENKOFER), 1873, 361; 1874, 36.
- carbonic anhydride in, at Tabor, Bohemia, in 1874 and 1875 (FARSKÝ), 1878, A., 164.
- of sea-coast places, carbonic anhydride in (MUIR), 1876, i., 679.
- contamination of, arising from artificial illumination, and on the distribution of carbonic anhydride in close rooms (ERISMANN), 1877, ii., 810.
- estimation of carbonic anhydride, and of volatile and suspended organic matter in (DUPRÉ and HAKE), 1879, T., 168.
- dust in (TISSANDIER), 1874, 672; 1881, A., 843.
- apparatus for estimating oxygen in (FISCHER), 1880, A., 137.
- observations on, made with thallium papers (SCHÖNE), 1881, A., 20.
- ozone in (MARIÉ-DAVY), 1876, ii., 171; (LÉVY), 1877, ii., 916; 1878, A., 703; (SCHÖNE), 1881, A., 20, 345; (HARTLEY), 1881, T., 119.
- estimation of aqueous vapour in (RÜDORFF), 1880, A., 420.
- soil and water, exchanges of ammonia between (SCHLESING), 1875, 419; 1876, i., 95, 518; ii., 44, 172, 319.
- Atmospheric air** and plants, exchanges of gas between (DEHÉRAIN and VESQUE), 1877, ii., 350; (MERGET), 1877, ii., 350, 634.
- contamination of, by trades and factories (ANON.), 1876, ii., 218.
- expired, apparatus for the analysis of (MARCEY), 1880, T., 493.
- Atomic constitution** of bodies (DE SAINT-VENANT), 1876, ii., 472.
- Atomic volume** (RAMSAY), 1879, T., 464.
- of hydrocarbons of the ethylene series and some of their derivatives (HERMANN), 1878, A., 640.
- of nitrogen (RAMSAY), 1881, T., 66.
- of organic compounds (HERMANN), 1876, ii., 496; 1878, A., 637, 697.
- Atomic weights in general** (BUTLEROFF), 1882, A., 922.
- latent heats and tensions of vapours, simple relations between (PICTET), 1877, i., 162.
- Atomic weight, errors of** (THORPE), 1880, T., 370.
- of aluminium (MALLET), 1880, A., 701; 1882, A., 279.
- of antimony (SCHNEIDER), 1879, A., 354; 1881, A., 78; (KESSLER), 1879, A., 772; 1880, A., 299; (COOKE), 1880, A., 300, 704; 1881, A., 512; 1882, A., 367.
- of beryllium (REYNOLDS), 1877, i., 579; (NILSON and PETERSSON), 1878, A., 557; 1880, A., 792, 850; (MEYER), 1878, A., 557; 1881, A., 139; (BRAUNER), 1878, A., 704; 1881, A., 224; (NILSON), 1881, A., 140; (BLAKE), 1882, A., 701.
- of cadmium (HUNTINGTON), 1882, A., 363.
- of caesium (GODEFFROY), 1876, ii., 272.
- of carbon (ROSCOE), 1882, A., 794.
- of cerium (RAMMELSBERG), 1873, 601; 1877, i., 282; (MENDELÉEFF), 1873, 1004; (BÜHRIG), 1876, i., 682; (HILLEBRAND), 1877, i., 50.
- of didymium (MENDELÉEFF), 1873, 1004; (HILLEBRAND), 1877, i., 50; (RAMMELSBERG), 1877, i., 282.
- of the elements, relation between (WÄCHTER), 1878, A., 468; (FEDOROFF), 1882, A., 358.
- and its relation to their chemical and physical properties (BAYLEY), 1882, A., 359.
- specific gravity and hardness of the metallic elements, relation between (LEA), 1874, 964; (BOTTONE), 1875, 232.

- Atomic weight of iridium** (SEUBERT), 1879, A., 125.
- of lanthanum (MENDELÉEFF), 1873, 1004; (MAGRIGNAC), 1874, 26; (HILLEBRAND), 1877, i., 50; (RAMMELSBERG), 1877, i., 282; (BRAUNER), 1882, T., 75.
- of molybdenum (MEYER), 1874, 132; (RAMMELSBERG), 1878, A., 14.
- of platinum (SEUBERT), 1881, A., 514.
- of potassium (FRESENIUS), 1882, A., 1231.
- of rubidium (GODEFFROY), 1876, ii., 272.
- of scandium (NILSON), 1880, A., 850.
- of selenium (PETERSSON and EKMAN), 1877, i., 44.
- of tellurium (WILLS), 1879, T., 704.
- of thallium (CROOKES), 1873, 355.
- of uranium (RAMMELSBERG), 1873, 247; (DONATH), 1879, A., 688; (ZIMMERMANN), 1882, A., 1031.
- of ytterbium (NILSON), 1880, A., 703.
- of yttrium (CLEVE and HÖGLUND), 1873, 137.
- Atomic weight determinations** (KOPP), 1879, A., 769.
- Atomcity**, periodic, history of (MEYER), 1880, A., 605; 1881, A., 138; (MENDELÉEFF), 1881, A., 138.
- Atoms**, multivalent, so-called differences in the quantivalence of (LOSSEN), 1881, A., 679.
- absolute weight of (ANNAHEIM), 1877, i., 31.
- transposition of (MEYER and FORSTER), 1876, ii., 182.
- isolated, comparable with material points; remarks on the actual existence of matter formed of (BERTHELOT), 1876, ii., 471.
- Atopite** (v. NORDENSKIÖLD), 1879, A., 21.
- Attractylic acid** (LEFRANC), 1873, 638.
- Atralinic acid** (PATERNÒ and OGIALORO-TODARO), 1877, ii., 786.
- Atranoric acid** and its derivatives (PATERNÒ and OGIALORO-TODARO), 1877, ii., 786; (COPPOLA), 1882, A., 867; (PATERNÒ), 1882, A., 1033.
- Atracic acid** (PATERNÒ), 1882, A., 1084.
- Atrogylic acid** ( $\alpha\beta$ -dihydroxy- $\alpha$ -phenylpropionic acid) and its salts (FITTIG and KAST), 1881, A., 428.
- Atrolactic acid**. See  $\alpha$ -Hydroxy- $\alpha$ -phenylpropionic acid.
- Atrolactyltropine** ( $\psi$ -atropeine) (LADENBURG), 1882, A., 984.
- Atronene** (atronol) (FITTIG), 1881, A., 426.
- Atronenesulphonic acid**, atronic acid, and isoatronic acid and their salts (FITTIG), 1881, A., 426.
- Atronol**. See Atronene.
- Atronylenesulphonic acid** and atronylsulphone (FITTIG), 1881, A., 427.
- Atropa Belladonna*, fluorescent body in (FASSBENDER), 1877, i., 213.
- chemico-legal examination of (WASILEWSKY), 1877, ii., 934.
- Atropic acid** ( $\alpha$ -phenylacrylic acid) (FITTIG and WURSTER), 1879, A., 379; (PESCI), 1882, A., 741.
- additive compounds of (KRAUT and MERLING), 1881, A., 425; (MERLING), 1881, A., 1143.
- brom- (FITTIG and WURSTER), 1879, A., 380.
- isoAtropic acid (PESCI), 1882, A., 740.
- isoAtropic acids,  $\alpha$ - and  $\beta$ -, and their salts (FITTIG and WURSTER), 1879, A., 379; (FITTIG), 1880, A., 120; 1881, A., 425.
- Atropine** and its derivatives. See under Alkaloids.
- Atropyltropine** (anhydrotropine) (LADENBURG), 1880, A., 715.
- Attraction**, chemical and molecular. See Affinity.
- Augite** (pyroxene) (PETERSEN), 1873, 735; (LIVERSIDGE), 1881, A., 995.
- varieties of (v. ZEPHAROVICH), 1879, A., 364.
- artificial (GRUNER), 1881, A., 694.
- artificial formation of (LECHARTIER), 1873, 40.
- chemical composition of the yellow, from Vesuvius (VOM RATH), 1876, ii., 53.
- volume constitution of (SCHRÖDER), 1874, 874.
- pseudomorphosis of, into talc (HELLAND), 1873, 356.
- slag-like (FISCHER), 1881, A., 990.
- highly aluminous, from Amhurst Co., analysis of (PAGE), 1881, A., 554.
- (leucaugite) from Amity, New York (LEEDS), 1874, 29.
- from Nordmark in Sweden (SjÖGREN), 1881, A., 380.
- analysis of (HARRINGTON), 1881, A., 543.
- Augite-andesite** (OEBBEKE), 1882, A., 1035.
- Augite-diorite**, from Minnesota (STRENG and KLOOS), 1877, ii., 580, 721.
- Augite-group**, constitution of (DOELTER), 1881, A., 371.
- Augite-twin**, polysynthetical, from Bell, near Laach (LASPEYRES), 1878, A., 208.

**Augitic felsite porphyries**, near Leipzig (KALKOWSKY), 1875, 624.

**Augitic trachytes** of the Andes (ARTOPE), 1874, 559.

**Aurantia** (GNEHM), 1877, i., 310; (LEHNE), 1881, A., 41.

**Aurantiin**. See Naringin under Glucosides.

**Auric and aurous**. See under Gold.

**Aurin** (*triphenolcarbinol anhydride*). See Rosolic acid.

**Aurora borealis**, spectrum of the (v. OETTINGEN), 1873, 242.

**Australene**, formula of (FLAWITZKY), 1879, A., 168.  
nitroso- (TILDEN and SHENSTONE), 1877, i., 556.

**Autoclaves**, saponification of neutral fats in (NITSCHKE), 1876, ii., 451.

**Autunite**. See Calco-uranite.

**Aventurine orthoclase** (LEEDS), 1873, 248.

**Avic acid**, occurrence of, in guano (CHEVRELL), 1873, 1052; 1874, 90; 1875, 100.

**Axinite** from Botallack in Cornwall, crystalline form of (HESSENBERG), 1873, 1012.

**Azadirachta indica** (*Nim tree*), constituents of the bark of (BROUGHTON), 1873, 1157.

**Azelaic acid** and its salts (LIMPACH), 1878, A., 403; (KRAFFT), 1878, A., 853; (DALE and SCHORLEMMER), 1879, T., 684; (GANTTER and HELL), 1881, A., 578.  
calcium salt of, dry distillation of (DALE and SCHORLEMMER), 1879, T., 687.  
separation and properties of mixtures of suberic acid and (GANTTER and HELL), 1881, A., 891.

*n*-**Azelaic acid**, conversion of furfurylangelic acid into (TÖNNIES), 1879, A., 915.

**Azo-colouring matters**. See Colouring matters.

## AZO-COMPOUNDS—

**Azo-compounds** (MICHLER), 1874, 695; 1875, 644; (MEYER and AMBÜHL), 1875, 1202; (STEBBINS), 1880, A., 389.  
nomenclature of (HEUMANN), 1881, A., 163; 1882, A., 1061.  
formation of (FLEISCHER), 1876, ii., 415.  
action of chloro-*o*-dinitrobenzene on (WILLGERODT), 1878, A., 570.  
mixed (MEYER and AMBÜHL), 1876, i., 84; (MEYER), 1876, ii., 93; (BARBIERI), 1876, ii., 94.

## AZO-COMPOUNDS—

**Azo-compounds**, amido-, action of amides on (WITT), 1877, ii., 453.  
of the tolyl series (NIETZKI), 1877, ii., 453, 767.

**"Acetyldiazobenzene"** (FISCHER), 1878, A., 309.

**Anthraceneazobromdiimido-anthracene**, dibromodiimido- (CLAUS and DIERNFELLNER), 1882, A., 523.

**Azobenzene** (LEEDS), 1882, A., 502.  
preparation of (ALEXÉEFF), 1874, 261; (ANSCHÜTZ and SCHULTZ), 1877, i., 206; (SCHMIDT and SCHULTZ), 1879, A., 630; 1881, A., 909.  
preparation of, from aniline (SCHMITT), 1879, A., 313.  
formation of, from bromaniline (CLAUS), 1882, A., 722.  
ebullition volume of (RAMSAY), 1879, T., 472.  
crystalline form of (ALEXÉEFF), 1882, A., 965.  
action of antimonious chloride on (BOGDANOFF), 1877, ii., 325.  
action of zinc ethyl on (FRANKLAND and LOUIS), 1880, T., 560.  
reduction of, to azoxybenzene and capability of, to form additive products (WERIGO), 1873, 383.  
bromides (WERIGO), 1873, 386.  
compound of, with benzene (SCHMIDT), 1873, 499.

**Azobenzene**, amido-. See Benzeneazobenzene.

2:4-diamido-. See Chrysoidine.

*p*-dibrom- (WERIGO), 1873, 383; (CALM and HEUMANN), 1880, A., 880.

*p*-dibromotrinitr- (WERIGO), 1873, 384.

*p*-dichlor- (CALM and HEUMANN), 1880, A., 880; (WILLGERODT), 1882, A., 953.

dichloronitr- (CALM and HEUMANN), 1880, A., 880.

trinitr- (FISCHER), 1878, A., 309.

**Azobenzene**-. See also Benzeneazo- and Phenylazo-.

**Azobenzeneacetonecarbonic acid**. See Phenylazoacetoacetic acid.

**Azobenzenedioxybenzene**,  $\alpha$ - and  $\beta$ -. See Benzene-*o*- and -*p*-azoresorcinol.

**Azobenzenetritrophenol** (STEBBINS), 1880, A., 389, 880.

**Azobenzenesulphonic acid**. See Benzeneazobenzenesulphonic acid and Sulphobenzeneazobenzenesulphonic acid.



## AZO-COMPOUNDS—

- Azobenzoic acid.** See Carboxybenzeneazobenzoic acid.
- Azoconhydrine.** See Coniinenitrosamine.
- Azocumic acid** (ALEXÉEFF), 1882, A., 971.
- Azonaphthalene.** See  $\alpha\beta$ -Naphthazine.
- Azonaphthaleneresorcinolazobenzene.** See Benzeneazodihydroxybenzeneazonaphthalene.
- Azonaphthoic acid.** See Carboxynaphthaleneazo- $\beta$ -naphthoic acid.
- Azonitretethylphenyl.** See Benzeneazonitretthane.
- Azo-opianic acid.** See Hemipinic anhydride, amido-.
- p*-Azophenetoil** (HEPP), 1878, A., 59.  
*dinitr.* (ANDREAE), 1880, A., 466.
- Azophenetoils, *o*- and *p*-** (SCHMITT and MÖHLAU), 1879, A., 317.
- Azophenol.** See Hydroxybenzeneazophenol.  
*dichlor.* See Quinoneimide, chloro-.
- Azo-*o*-phenoxyacetic acid** (THATE), 1882, A., 849.
- Azophenylene.** See Phenazine.
- Azophthalic acid, and its salts** (CLAUS and MAY), 1882, A., 515.  
 preparation of (ANON.), 1882, A., 125.
- Azoresorcinol.** See Resazurin.
- p*-Azosulphoxybenzenephlogluinol.** See Trihydroxybenzeneazobenzenesulphonic acid.
- Azosulphoxylxyleneresorcinol.** See Dihydroxybenzeneazoxylene-*m*-sulphonic acid.
- Azotoluene.** See Tolueneazotoluene.
- Azotlueneresorcinol.** See Dihydroxybenzeneazotoluene.
- Azotlueneresorcinolazobenzene.** See Benzeneazodihydroxybenzeneazotoluene.
- Azotoluic acid.** See Carboxytolueneazotoluic acid.
- Azotoluidine** (BUCKNEY), 1878, A., 863.
- Azoxyanisyl- $\beta$ -naphthol.** See Carboxymethoxybenzeneazo- $\beta$ -naphthol.
- Azoxybenzene** (PETRIEFF), 1873, 1028.  
 preparation of (MOLTSCHANOWSKI), 1882, A., 965; (KLINGER), 1882, A., 1061.  
 action of stannous chloride on (SCHMIDT and SCHULTZ), 1879, A., 630.

## AZO-COMPOUNDS—

- Azoxybenzene, reduction of, to azobenzene** (WERIGO), 1873, 385.  
 conversion of, into oxyazobenzene (WALLACH and BELL), 1880, A., 556; (WALLACH and KIEPENHEUER), 1882, A., 394.
- Azoxybenzene, *di*- and *tetra*-brom-** (WERIGO), 1873, 385.  
*dichlor.* (HEUMANN), 1873, 168; (WILLGERODT), 1882, A., 953.  
*p*-*dichloronitr.* (HEUMANN), 1873, 168; (CALM and HEUMANN), 1880, A., 880.
- Azoxybenzide, *tetrachlor.*** See Benzeneazoxydichlorobenzene, *dichloro*-.
- m*-Azoxybenzophenol.** See *p*-Hydroxybenzene-*m*-azobenzoic acid.
- m*-Azoxybenzoyl- $\beta$ -naphthol.** See *m*-Carboxybenzeneazo- $\beta$ -naphthol.
- m*-Azoxybenzoylresorcinol.** See Dihydroxybenzene-*m*-azobenzoic acid.
- m*-Azoxybenz-*o*-sulphonic acid.** See Hydroxysulphobenzeneazobenzoic acid.
- Azoxyleneresorcinol.** See Dihydroxybenzeneazoxylenes.
- o*-Azoxyphenetoil** (SCHMITT and MÖHLAU), 1879, A., 317.
- Azoxyphenetoils, *trinitr.*** (ANDREAE), 1880, A., 467.
- Azoxy-*p*-toluidine** (BUCKNEY), 1878, A., 863.
- Benzeneazo-**. See also Phenylazo- and Azobenzene.
- Benzeneazoaniline** (*amidoazobenzene*; *diazomidobenzene*) and its salts (SCHMIDT), 1873, 64; (GIRARD and PAEST), 1879, A., 383; (ALEXÉEFF), 1881, A., 262.
- Benzeneazobenzenazo- $\beta$ -naphthol, and its sulphonic acids** (NIETZKI), 1881, A., 178.
- p*-Benzeneazobenzenedisulphonic acid** (JANOVSKY), 1882, A., 48, 835.  
 potassium salt of (LAAR), 1880, A., 322.
- Benzeneazobenzene-*p*-sulphonic acid, and its chloride** (JANOVSKY), 1882, A., 836.  
 action of sulphuretted hydrogen on (SCHULTZ), 1881, A., 907.  
*di*bromo- (WERIGO), 1873, 384.  
*mono*-, *di*- and *tri*-nitro-, and their salts (JANOVSKY), 1882, A., 836, 1285.
- Benzene-*m*-azobromobenzene, *m*-bromo-** (GABRIEL), 1877, i., 307.
- Benzene-*p*-azobromobenzene, *p*-bromo-** (WERIGO), 1873, 385.

## AZO-COMPOUNDS—

- Benzeneazo-*m*-bromoresorcinol** (TYPE), 1878, A., 219.
- Benzene-*m*-azochlorobenzene**, *m*-chloro- (LAUBENHEIMER), 1876, i., 577.
- Benzene-*p*-azochlorobenzene**, *p*-chloro- (HEUMANN), 1873, 167.
- Benzeneazochlorobenzenesulphonic acid**, *p*-chloro- (CALM and HEUMANN), 1880, A., 880.
- Benzeneazo-*p*-cresol** (MAZZARA), 1880, A., 163.
- Benzeneazo-*p*-cresolsulphonic acid** (STEBBINS), 1880, A., 716, 881; 1881, A., 42.
- Benzeneazodiethylamidobenzoic acid** (GRIESS), 1877, ii., 455.
- Benzeneazodihydroxybenzeneazonaphthalene** (*azonaphthalenesorcinolazobenzene*) and **benzeneazodihydroxybenzeneazotoluene** (*azotoluenesorcinolazobenzene*) (WALLACH), 1882, A., 610.
- Benzeneazodimethylamidobenzoic acid** and **benzeneazodimethylaniline** (GRIESS), 1877, ii., 455.
- Benzeneazodiphenylamine** (*phenylamidazobenzene*), and the action of amylie nitrite and acetic acid on (WITT), 1879, T., 185.
- Benzeneazo-diphenyl- and -ditolyl-carbamideazobenzene** (SARAUW), 1882, A., 507.
- Benzeneazoethane** (*azophenylethyl*) (FISCHER and EHRHARDT), 1878, A., 573; 1880, A., 243.
- Benzeneazohydroxybenzeneazobenzene** (*phenolbisdiazobenzene*) (CARO and SCHRAUBE), 1879, A., 148; (FRANKLAND), 1880, T., 752.
- and analogous compounds (GRIESS), 1876, ii., 416.
- Benzeneazo-*o*-hydroxybenzoic acid** (STEBBINS), 1880, A., 715; 1881, A., 41.
- Benzeneazomethazonic acid** (KIMICH), 1877, ii., 325.
- Benzeneazo- $\alpha$ -naphthol** and **- $\alpha$ -naphtholsulphonic acid** (TYPE), 1878, A., 219.
- Benzeneazo- $\beta$ -naphtholdisulphonic acid** (STEBBINS), 1880, A., 881.
- Benzeneazo- $\beta$ -naphtholsulphonic acid** (GRIESS), 1879, A., 316.
- Benzeneazonaphthylamine** (GIRARD and PAEST), 1879, A., 383.
- Benzeneazo-naphthylamine** (*diazobenzenemidonaphthol*) (GRIESS), 1879, A., 629.

## AZO-COMPOUNDS—

- Benzeneazonitroethane** (*azonitroethyl-phenyl*) (MEYER and AMBÜHL), 1875, 1202; 1876, i., 85.
- p*-bromo- (WALD), 1876, ii., 92.
- m*-nitro- (HALLMANN), 1876, ii., 93.
- Benzeneazonitrosobutane** (*nitrosobutylazophenyl*) (ZÜBLIN), 1878, A., 285.
- Benzeneazo-*m*-nitrophenol** (STEBBINS), 1880, A., 715.
- Benzeneazonitropropane** (MEYER), 1876, ii., 93.
- Benzeneazo-*o*-resorcinol** (TYPE), 1878, A., 219.
- Benzeneazophenol** (*oxyazobenzene*) and its derivatives (TSCHIRWINSKY), 1873, 1027; (KIMICH), 1876, i., 268; (SCHILLONE), 1882, A., 726.
- preparation of (MAZZARA), 1880, A., 163.
- conversion of azoxybenzene into (WALLACH and BELL), 1880, A., 556; (WALLACH and KIEPENHEUER), 1882, A., 394.
- Benzeneazophenolsulphonic acid** (GRIESS), 1879, A., 315.
- See also Hydroxybenzeneazobenzenesulphonic acid.
- Benzeneazo-*m*-phenylenediamine**. See Chrysoidine.
- Benzeneazophenylic benzoate** (*benzoxiazobenzene*) (TSCHIRWINSKY), 1873, 1027.
- Benzeneazopyrogallol** (STEBBINS), 1880, A., 390, 715, 880.
- Benzene-*o*- and -*p*-azoresorcinol** ( $\alpha$ - and  $\beta$ -azobenzendi-*oxybenzene*) (TYPE), 1878, A., 219.
- Benzeneazothymolsulphonic acid** and its salts (STEBBINS), 1882, A., 884.
- Benzeneazo-*m*-tolylenediamine** (STEBBINS), 1880, A., 715; 1881, A., 42.
- Benzene-*m*-azoxybromobenzene**, *m*-bromo- (GABRIEL), 1877, i., 307.
- Benzene-*p*-azoxybromobenzene**, *p*-bromo- (V. HOFMANN and GEYGER), 1873, 169.
- Benzene-*m*-azoxychlorobenzene**, *m*-chloro- (LAUBENHEIMER), 1876, i., 577.
- Benzeneazoxychlorobenzene**, *p*-chloro- (HEUMANN), 1873, 167; (V. HOFMANN and GEYGER), 1873, 169.
- Benzeneazoxydichlorobenzene**, *di*-chloro- (*tetrachlorazoxybenzide*) (BEILSTEIN and KURBATOFF), 1879, A., 231.

## AZO-COMPOUNDS—

- Benzenazoxychloronitrobenzene**, *p*-chloro- (HEUMANN), 1873, 167.
- Benzenazoxyiodobenzene**, *m*- and *p*-iodo- (GABRIEL), 1877, i., 307.
- Benzenazoxytrinitrobenzene** (v. BAEYER and JAEGER), 1876, i., 273.
- Benzenazo-**. See also Phenylazo- and Azobenzene-.
- Benzoxiazobenzene**. See Benzenazophenyl benzoate.
- "Benzoyldiazobenzene"** (FISCHER), 1878, A., 308.
- iso***Butylazophenyl**, nitro-. See Benzenazonitroisobutane.
- Carboxybenzenazo-*o*-benzoic acid** (*azobenzoic acid*), composition of (CLAUS), 1873, 1142.  
silver salt of, action of ethylic iodide on (GOLUBEFF), 1875, 1203.
- o*-Carboxybenzene-*o*-azobenzoic acid** (*o-azobenzoic acid*) and its barium and silver salts (GRIESS), 1878, A., 149.
- Carboxybenzenazo-*o*-benzoic acids**, *o*-, *m*- and *p*-, ethyl ethers of (FITTICA), 1875, 766; 1879, A., 152.
- m*-Carboxybenzenazo-*m*-dimethylamidobenzoic acid** (GRIESS), 1877, ii., 456.
- m*-Carboxybenzenazo- $\beta$ -naphthol** (*m-azoxybenzoyl- $\beta$ -naphthol*) and its salts (GRIESS), 1882, A., 49.
- m*-Carboxybenzenazo- $\beta$ -naphthol-mono- and -di-sulphonic acids** (GRIESS), 1882, A., 49.
- Carboxybenzenazonitrene** (WALD), 1876, ii., 92.
- Carboxybenzenazonitrobenzoic acid**, nitro- (GOLUBEFF), 1874, 805.
- Carboxymethoxybenzenazo- $\beta$ -naphthol** (*azoxyanisyl- $\beta$ -naphthol*) (GRIESS), 1882, A., 49.
- Carboxymethoxybenzenazo- $\beta$ -naphthol-mono- and -di-sulphonic acids** (GRIESS), 1882, A., 49.
- Carboxynaphthalenazo- $\beta$ -naphthoic acid** (*azonaphthoic acid*) (v. RAKOWSKI), 1873, 392.
- p*-Carboxytoluenazo-*p*-toluic acid** (*acotoluic acid*) (FITTICA), 1875, 265.
- Diazoamidobenzene**. See Benzenazoaniline.
- Diazoamide-compounds** (GRIESS), 1875, 463.  
action of phosgene on (SARAUW), 1882, A., 507, 608.
- Diazoamidonitrobenzene** (MÜLLER-JACOES), 1878, A., 140.

## AZO-COMPOUNDS—

- p*-Diazoanisole**, salts of (SALKOWSKI), 1875, 64.
- $\alpha$ -Diazoanthraquinone nitrate** (BÖTTGER and PETERSEN), 1873, 389.
- Diazobenzanilide**, action of phosgene on (SARAUW), 1882, A., 507.
- Diazobenzene**, action of cyanogen compounds on (GRIESS), 1876, i., 932; 1880, A., 316.  
action of sulphuretted hydrogen on (GRAEBE and MANN), 1882, A., 1285.  
action of, on phenylhydrazine (FISCHER), 1878, A., 305.  
amides of (v. BAEYER and JAEGER), 1876, i., 273.  
benzenesulphinic and hydrazine derivative of (KOENIGS), 1878, A., 219.  
nitrate, thermal constants of (BERTHELOT and VIELLE), 1881, A., 809.  
reaction of nitropropane with (MEYER), 1876, ii., 93.  
bromo-, action of potassium cyanide on (GABRIEL), 1880, A., 41.  
sulphate or nitrate, action of potassium cyanide on (GABRIEL), 1880, A., 41.
- Diazobenzene-*m*-amidobenzoic acid**, action of phosgene on (SARAUW), 1882, A., 608.
- Diazobenzenamidonaphthol**. See Benzenazo- $\alpha$ -naphthylamine.
- Diazobenzenedisulphonic acid** (HEINZELMANN), 1878, A., 409.  
its salts and its bromo-derivative (ZANDER), 1880, A., 122.
- Diazobenzenephosphonic nitrate**. See Diazophosphenylic nitrate.
- Diazobenzenepiperidine** (v. BAEYER and JAEGER), 1876, i., 273.
- m*-Diazobenzenesulphonic acid** (BERNSEN), 1875, 1029.
- Diazobenzimide** (FISCHER), 1879, A., 305, 311.
- o*-Diazobenzoic acid**, nitrates of (GRIESS), 1877, i., 474.
- m*-Diazobenzoic acid**, sulphate of (FITTICA), 1878, A., 980.  
the semi- and  $\frac{2}{3}$ -sulphate of (GRIESS), 1877, i., 475.
- Diazobenzoic acids**, formation of, from amidobenzoic acid (LIMPRICHT), 1878, A., 222.  
*o*- and *m*-, constitution of compounds of (GRIESS), 1877, i., 474.
- Diazo-*p*-bromobenzanilide**, action of phosgene on (SARAUW), 1882, A., 609.

## AZO-COMPOUNDS—

**Diazobromobenzenesulphonic acid** (LIMPRICHT), 1878, A., 492.

**Diazo-*tri*- and -*tera*-bromobenzene-sulphonic acids** (BECKURTS), 1876, ii., 304; (SPIEGELBERG), 1879, A., 801.

**Diazo-*di*-bromophenols, *o*- and *p*-, and their derivatives** (BÖHMER), 1882, A., 397.

***p*-Diazo-*di*-bromophenolsulphonic acid, salts of** (BÖHMER), 1882, A., 398.

***p*-Diazo-*m*-bromotoluene-*o*-sulphonic acid** (WECKWARTH), 1874, 1093.

**Diazobromotoluenesulphonic acids** (SCHÄFER), 1875, 462.

***c*-Diazo-*di*-bromotoluene-*p*-sulphonic acid** (HAYDUCK), 1875, 369, 462.

**"Diazocamphor"** (SCHIFF), 1882, A., 527.

**Diazochlorothymol hydrochloride** (ANDRESEN), 1881, A., 590.

**Diazo-compound of  $\alpha$ -nitronaphthylamine ("nitramidodinaphthyl-imide")** (LIEBERMANN and DITTLER), 1873, 1232.

**Diazo-compounds** (GRIESS), 1877, i., 474; 1882, A., 48; (ALEXÉEFF), 1881, A., 262.

constitution of (ERLENMEYER), 1875, 166; (BLOMSTRAND), 1875, 571.

action of, on tertiary amines (GRIESS), 1877, ii., 454.

action of hydrocyanic acid on (GABRIEL), 1880, A., 41.

decomposition of, by water (WROBLEWSKI), 1875, 73.

colouring matters derived from (WITT), 1879, T., 179.

preparation of sulphonic compounds from, by means of sulphurous acid (MÜLLER and WIESINGER), 1879, A., 933.

**Diazo-compounds, nitro-** (LIMPRICHT), 1874, 805.

***p*-Diazocresol** (WAGNER), 1875, 256.

**Diazoethoxane** (ZORN), 1879, A., 221.

**Diazo-group, replacement of, by the group  $\text{SO}_3\text{H}$**  (HÜBNER), 1878, A., 145.

**Diazo-hydroxyphenoldisulphonic acid** (BALENTINE), 1880, A., 809.

**Diazo-hydrocyanorosaniline.** See Hexazodiphenyltolylcarbonyl cyanide.

**Diazo-*p*-leucaniline chloride.** See Hexazotriphenylmethane chloride.

## AZO-COMPOUNDS—

**$\alpha$ -Diazonaphthalene**, action of, on salicylic acid (FRANKLAND), 1880, T., 746.

**$\alpha$ -Diazonaphthalenesulphonic acid** (LEVE), 1878, A., 153; (NEVILLE and WINTHER), 1880, T., 632.

**Diazonitrobenzaldoxime chlorides** (GABRIEL and MEYER), 1881, A., 730; (GABRIEL), 1882, A., 1070.

**Diazonitrobenzenes**, conversion of, into nitrophenols (FITTIG), 1874, 696.

**Diazonitrobenzoic acid**, formation of, from nitr-*p*-amidobenzoic acid (SALKOWSKI), 1875, 72.

***p*-Diazonitroso-oxindole chloride** (GABRIEL and MEYER), 1881, A., 731; 1882, A., 188.

***p*-Diazonitrotoluene-*o*-sulphonic acid** (WECKWARTH), 1874, 1093.

***p*-Diazo-*mono*- and -*di*-nitrotoluene-*o*-sulphonic acids** (PAGEL), 1875, 899.

***o*-Diazonitrotoluene-*p*-sulphonic acid** (HAYDUCK), 1875, 462.

***p*-Diazo-*o*-nitrotoluene-*m*-sulphonic acid** (v. PECHMANN), 1875, 80.

**Diazophenetoil nitrate, *di*bromo-, and *tri*bromo-** (MÖHLAU and OEHMICHEN), 1882, A., 396.

***p*-Diazophenol** (WESELSKY), 1875, 1203.

**Diazophenols** (BÖHMER), 1882, A., 396.

**Diazophenoldisulphonic acid** (LIMPRICHT), 1882, A., 1075.

**Diazophenolsulphonic acids** (BENNEWITZ), 1874, 374.

**Diazophosphenylic acid and nitrate** (MICHAELIS and BENZINGER), 1876, ii., 203; 1878, A., 58.

**" $\gamma$ -Diazoisophthalic acid"** (BEYER), 1882, A., 1297.

**Diazo-resorcinol.** See Resazurin.

**Diazo-rosaniline.** See Hexazodiphenyltolylcarbinol.

**Diazo-*para*-rosaniline.** See Hexazotriphenylcarbinol.

**Diazosalicylic acid** (GOLDBERG), 1879, A., 928.

***p*-Diazotoluanilide** (*diazobenzene-*p*-toluide*), action of phosgene on (SARAUW), 1882, A., 507.

***p*-Diazotoluene-*o*-sulphonic acid** (JENSEN), 1875, 77.

**Diazotoluene-*m*-sulphonic acids, *o*- and *p*-** (NEVILLE and WINTHER), 1880, T., 628.

***o*-Diazotoluene-*p*-sulphonic acid** (HAYDUCK), 1874, 1091; 1875, 461.



## AZO-COMPOUNDS—

- Diazoxybenzoic acid** and its salts and reactions (MICHLER), 1875, 644.
- m*-**Dihydroxybenzeneazobenzenesulphonic acid** (WITT), 1879, T., 188.
- Dihydroxybenzene-*m*-azobenzoic acid** (*m*-*azoxybenzoylresorcinol*) (GRIESS), 1882, A., 49.
- Dihydroxybenzeneazonaphthalenesulphonic acid** (STEBBINS), 1880, A., 881.
- Dihydroxybenzeneazotoluene** (*azotoluenesorcinol*) and **dihydroxybenzeneazoxylene** (*azoxylenesorcinol*) (WALLACH), 1882, A., 610.
- Dihydroxybenzeneazoxylene-*m*-sulphonic acid** (GRIESS), 1879, A., 316.
- Dimethylamidobenzeneazobenzenesulphonic acid**. See Helianthin.
- Dimethylamidobenzeneazobenzoic acid** (GRIESS), 1877, ii., 456.
- "Dioxyazobenzene, trimitro-"** (PETRIEFF), 1873, 1028.
- Diphenyl-azo- and -azoxy-diphenyl** (ZIMMERMANN), 1881, A., 175.
- Diphenyl-*p*-azo- and -azoxy-nitrodiphenyl, *p*-nitro-** (WALD), 1877, ii., 341.
- Diphenyldiazobenzenecarbamide**. See Benzeneazodiphenylcarbamide azobenzene.
- Di-*p*-tolyl diazobenzenecarbamide**. See Benzeneazoditolylcarbamide azobenzene.
- Hexazodiphenyltolylcarbinyll** (*diazarosanine*) hydrochloride, **hexazodiphenyltolylcarbinyll cyanide** (*diazohydrocyanarosanine*), **hexazotriphenylcarbinyll** (*diazoparosanine hydrochloride*) and **hexazotriphenylmethane chloride** (*diazop-leucanine chloride*) (E. and O. FISCHER), 1879, A., 385.
- Hydrodibromazobenzene**. See *s*-Diphenylhydrazine, dibromo.
- Hydrodiazobenzoic acid** (GRIESS), 1877, i., 475.
- Hydroxyazobenzene**. See Benzeneazophenol.
- p*-**Hydroxybenzeneazobenzene-*m*- and -*p*-sulphonic acids** (GRIESS), 1879, A., 315.
- p*-**Hydroxybenzeneazobenzenesulphonic acid**, and its derivatives (TSCHIRWINSKY), 1873, 1027; (LIMPRICHT), 1882, A., 1074.
- p*-**Hydroxybenzeneazobenzene-*p*-sulphonic acid**, sodium salt of (*tro-pacoline*) (WITT), 1879, T., 184.
- nitro-** (GRIESS), 1879, A., 316.

## AZO-COMPOUNDS—

- Hydroxybenzeneazobenzenesulphonic acid**. See also Benzeneazophenolsulphonic acid.
- p*-**Hydroxybenzene-*m*-azobenzoic acid** (*m*-*azoxybenzoylresorcinol*) (GRIESS), 1882, A., 48.
- p*-**Hydroxybenzene-*p*-azophenol** (J. EGER), 1876, i., 580.
- Hydroxybenzene-*o*- and -*p*-azophenols, *o*- and *p*-, and *tetrabromo-*** (WESELSKY and BENEDIKT), 1878, A., 498; 1879, A., 718.
- Hydroxybenzeneazophenolsulphonic acid, dinitro** (STEBBINS), 1880, A., 881.
- p*-**Hydroxybenzene-*p*-azotoluene** (KIMICH), 1876, i., 268.
- Hydroxycarboxybenzeneazonaphthalene** (*naphthylazosalicylic acid*) and its decomposition by tin and hydrochloric acid (FRANKLAND), 1880, T., 747.
- β*-**Hydroxynaphthaleneazonaphthalenesulphonic acid** (GRIESS), 1879, A., 316; (V. MILLER), 1880, A., 664.
- Hydroxysulphobenzeneazobenzoic acid** (*m*-*azoxybenz-o-sulphonic acid*) and its salts (GRIESS), 1882, A., 48.
- Naphthalene-*p*-azo-*α*-naphthol** (FRANKLAND), 1880, T., 752.
- α*-**Naphthaleneazonaphthylenediamine** (STEBBINS), 1880, A., 715; 1881, A., 42.
- Naphtholazobenzenesulphonic acid**. See *p*-Sulphobenzeneazo-*β*-naphthol.
- β*-**Naphtholazobiphenyluric acid** (GRIESS), 1882, A., 50.
- β*-**Naphthol tetrazobenzene**. See Benzeneazobenzeneazo-*β*-naphthol.
- Naphthylazosalicylic acid**. See Hydroxycarboxybenzeneazonaphthalene.
- "triNitro-di- and tri-oxyazobenzene"** (PETRIEFF), 1873, 1028.
- Orcinol diazotoluene**. See *o*-Tolueneazo-orcinol.
- Oxyazobenzene**. See Benzeneazophenol.
- Oxybenzeneazonaphthalenesulphonic acid, nitro-** (STEBBINS), 1880, A., 881.
- Phenolbisdiazobenzene**. See Benzeneazohydroxybenzeneazobenzene.
- Phenylamidoazobenzene**. See Benzeneazodiphenylamine.
- Phenylazoacetoacetic acid** (*azobenzenearcaneacetic acid*) (MEYER), 1878, A., 396; (ZÜBLIN), 1878, A., 879.

## AZO-COMPOUNDS—

**Phenylazo-**. See also Benzeneazo- and Azobenzene-.

**Phloroglucinol-*p*-azobenzenesulphonic acid**. See Trihydroxybenzeneazobenzenesulphonic acid.

*o*-**Sulphobenzeneazobenzene-disulphonic acids**,  $\alpha$ - and  $\beta$ -, and their salts (V. REICHE), 1880, A., 805.

*m*-**Sulphobenzeneazobenzene-*m*-sulphonic acid**, chloride, amide and ethyl salt of (CLAUS and MOSER), 1878, A., 865; (MAHRENHOLTZ and GILBERT), 1880, A., 804.

*m*-**Sulphobenzeneazobenzene-*p*-sulphonic acid** and its salts (LIMPRICHT), 1878, A., 722; 1882, A., 516.

*p*-**Sulphobenzeneazobenzene-*p*-sulphonic acid** and its metallic salts and chloride (LAAR), 1880, A., 322; 1882, A., 194; (LIMPRICHT), 1882, A., 516; (JANOVSKY), 1882, A., 834.

**Sulphobenzeneazodihydroxy-naphthalene**, dibromo- (GRIESS), 1879, A., 317.

*m*-**Sulphobenzeneazo- $\alpha$ - and - $\beta$ -naphthol** (GRIESS), 1879, A., 316.

*p*-**Sulphobenzeneazo- $\alpha$ - and - $\beta$ -naphthol** (*tropaeolines*) (WITT), 1879, T., 184.

*p*-**Sulphobenzeneazo- $\beta$ -naphthol** and its salts (V. MILLER), 1880, A., 664.

dibromo- (STEBBINS), 1880, A., 881.

*p*-**Sulphobenzeneazo- $\beta$ -naphtholsulphonic acid** (GRIESS), 1879, A., 316.

*p*-**Sulphobenzeneazo-*o*-rcinol**, -resorcinol and -salicylic acid (GRIESS), 1879, A., 316.

*m*-**Sulphobenzene-*m*-azoxybenzenesulphonic acid** and its metallic salts, chloride and amide (LIMPRICHT), 1878, A., 722; (BRUNEMANN), 1880, A., 807.

**Sulpho-dibromazobenzolic acid**. See Benzeneazobenzenesulphonic acid, dibromo-.

**Sulphocarboxybenzeneazohydroxy-naphthoic acid** (GRIESS), 1879, A., 317.

**Sulphocarboxybenzeneazo- $\beta$ -naphthol- $\alpha$ -disulphonic acid** (GRIESS), 1882, A., 49.

**Sulphotolueneazotoluenesulphonic acids** and their metallic salts, chlorides and amides (NEALE), 1880, A., 806.

## AZO-COMPOUNDS—

**Sulphoxyazobenzolic acid**. See *p*-hydroxybenzeneazobenzenesulphonic acid.

**Tetrazodiphenyldisulphonic acid** (GRIESS), 1881, A., 428.

*p*-**Tolueneazoacetoacetic acid** (ZEBLIN), 1878, A., 880.

**Tolueneazomethazonic acid** (KIMICH), 1877, ii., 326.

*p*-**Tolueneazo- $\beta$ -naphtholdisulphonic acid** (STEBBINS), 1880, A., 881.

**Tolueneazonitretane**, *o*- and *p*- (BARBIERI), 1876, ii., 94.

**Tolueneazonitrotoluené** (PETRIEFF), 1873, 1027.

*o*-**Tolueneazo-*o*-rcinol** (SCICHLONÉ), 1882, A., 1285.

*o*-**Toluene-*o*-azotoluene** (HOOGWERFF and VAN DORP), 1878, A., 973.

*m*-**Toluene-*m*-azotoluene** (BARSILOWSKY), 1875, 1037; 1878, A., 300; 1881, A., 432; (GOLDSCHMIDT), 1879, A., 236.

*p*-**Toluene-*p*-azotoluene** (PETRIEFF), 1873, 1027; (BARSILOWSKY), 1878, A., 300; 1879, A., 237; 1881, A., 432; (LEEDS), 1882, A., 502.

preparation of, from toluidine (SCHMITT), 1879, A., 313.

*p*-**Tolueneazo-*p*-toluidine** (WITT), 1878, A., 53; (LAUBENHEIMER), 1878, A., 976.

*p*-**Tolueneazothymolsulphonic acid** (STEBBINS), 1882, A., 834.

*o*-**Toluene-*o*-azoxytoluene** (PETRIEFF), 1873, 1027.

dichloro- (V. HOFMANN and GEYGER), 1873, 169.

**Tolueneazoxy-*o*-toluidine**, *p*-amido- (BUCKNEY), 1878, A., 863.

*p*-**Toluene-*p*-azoxytoluene**, *mono*-, *di*-, and *tri*-nitro- (PETRIEFF), 1873, 1027.

**Trihydroxybenzeneazobenzenesulphonic acid** (*p*-azosulphoxybenzene-phloroglucinol) (STEBBINS), 1880, A., 880; 1881, A., 41.

**Xyleneazothymolsulphonic acid** (STEBBINS), 1882, A., 834.

*m*-**Xylene-*p*-azo-*p*-xylydine** (NIETZKI), 1880, A., 552.

**Azophenine** (KIMICH), 1876, i., 268; (WITT), 1878, A., 54.

"**Azotin**" (PELLET), 1882, A., 769.

**Azulene** (*azulin*) from wormwood oil (WRIGHT), 1874, 1.

"**Azulin**," constitutional formula and colouring matter derived from (ERHART), 1878, A., 315.

**Azulmin.** See Trihydrocyanic acid under Cyanogen.

**Azurin** (LADENBURG), 1878, A., 572.

**Azurite**, composition and formation of (WIBEL), 1873, 1110.

## B.

**Babingtonite**, artificial (KLEMM), 1874, 965.

**Baccarine** (ARATA), 1879, A., 1045.

*Baccharis coridifolia* (mio-mio), alkaloid of (ARATA), 1879, A., 1045.

*Bacillus amylobacter* (*butyric ferment*) in the Carboniferous period (VAN TIEGHEM), 1880, A., 334.

*butyricus* (FITZ), 1878, A., 241; 1879, A., 664; 1880, A., 819; 1882, A., 1121.

effect of gases on (SZPILMAN), 1882, A., 417.

*subtilis*, presence of, in yeast (BROWN), 1873, 975.

tuberculosis (TOUSSAINT), 1882, A., 637, 1120; (KOCH; BAUMGARTEN), 1882, A., 1120.

*ureæ* (MUSCULUS), 1876, i., 952; (MIQUEL), 1878, A., 680; 1879, A., 817; 1880, A., 133.

See also Bacteria, Fermentation, Ferments, Microbes, and Micrococcus.

**Bacteria**, the origin of (BASTIAN), 1873, 406.

development of (HUIZINGA), 1874, 85.

development of, in organic infusions (PODE and LANKESTER), 1871, 85.

or their germs, existence of, in the healthy organs of animals (NENCKI and GLACOSA), 1879, A., 1046.

multiplication of, in the blood of living animals by a chemical ferment free from organisms (ROSSBACH), 1882, A., 1309.

in the atmosphere (MIFLET; MIQUEL), 1880, A., 727.

in the yolk of eggs (BÉCHAMP and EUSTACHE), 1878, A., 83.

chemical composition of, in putrefying liquids (NENCKI and SCHAEFFER), 1880, A., 176.

occurrence of, in milk, and in a potable water (ANON.), 1879, A., 817.

vitality of (ANON.), 1879, A., 817.

further observations on the temperature at which bacteria, vibriones, and their supposed germs are killed, when exposed to heat in a moist state and on the causes of putrefaction and fermentation (BASTIAN), 1874, 85.

**Bacteria**, composition of cell membranes of (RICHTER), 1882, A., 80. putrefaction induced by, in presence of alkali nitrates (MEUSEL), 1876, i., 413.

effect of putrefactive changes on (WERNICH), 1880, A., 726.

exclusion of oxygen from (GUNNING), 1878, A., 907.

action of alcohol on (GUNNING), 1879, A., 817.

action of compounds inimical to (HAMLET), 1881, T., 326.

action of, on gases (HATTON), 1881, T., 247.

influence of the galvanic current on (COHN and MENDELSSOHN), 1880, A., 726.

interference of, with brewing (MARPMANN), 1881, A., 1090.

formation of nitrites by (MEUSEL), 1876, i., 189.

reduction of nitrates by (GRIESSMAYER), 1876, ii., 650.

method of photographing (KOCH), 1879, A., 1046.

transformation of, into microzymes in the alimentary canal (BÉCHAMP and ÉSTOR), 1873, 1048.

*Bacterium termo* (LE BEL), 1881, A., 1021.

**Bacterium.** See also Bacillus, Fermentation, Microbes and Micrococcus.

**Baking-powder** (WEITZ), 1881, A., 132. American (MOTT), 1879, A., 1077.

**Balance Sheets** of the Chemical Society, 1873, 790; 1874, 1214; 1875, 1328; 1876, i., 640; 1877, i., 529; 1878, T., 243; 1879, T., 270; 1880, T., 263; 1881, T., 200; 1882, T., 245.

**Balance Sheets** of the Research Fund, 1876, i., 635; 1877, i., 524; 1878, T., 244; 1879, T., 271; 1880, T., 264; 1881, T., 201; 1882, T., 246.

**Balsams**, chemistry of (HIRSCHSOHN), 1878, A., 158.

Caroba (ANON.), 1882, A., 764.

Copaiba, constituents of (BRIN), 1882, A., 65.

examination of (MITER), 1877, ii., 374; (SIEBOLD), 1877, ii., 931; (BOWMAN), 1877, ii., 932.

Gurjun, a resin from (FLÜCKIGER), 1878, A., 439.

of *Liquidambar styraciflua* (HARRISON), 1876, i., 611.

Peru, adulteration of (SENIER), 1882, A., 112; (SCHLICKUM), 1882, A., 1339.

testing of (FLÜCKIGER), 1881, A., 947.

**Balsams**, Tolu (CARLES), 1874, 908;  
(BUSSE), 1876, ii., 640; (ANON.),  
1877, i., 720.  
action of carbon disulphide on  
(GUICHARD), 1875, 762; 1876, i.,  
616.

**Balsams**. See also Resins and Tur-  
pentine.

*Balsamum antarthriticum indicum*  
(HIRSCH), 1879, A., 262; 1880, A.,  
168.

**Balvraidite** (HEDDLE), 1882, A., 289.

**Bamboo**, potash from (ROMANIS), 1882,  
A., 781.

*Bambusa arundinacea*, analysis of the  
ash of the wood of (HORNBERGER,  
MUTSCHLER, and HAMMERBACHER),  
1875, 910.

**Banana** (CORENWINDER), 1879, A., 479.  
utilisation of (MARGANO and MÜNTZ),  
1879, A., 568.

**Bancoul nuts**. See *Aleurites triloba*.

**Baphic acid**, baphiin, baphnitin, and  
baphnitone, from *Baphis nitida*  
(barwood) (ANDERSON), 1876, ii., 582.  
*Baptisia tinctoria* (GREENE), 1880, A.,  
411.

**Bar iron**. See Iron.

**Barbaloin** (TILDEN), 1875, 1270.

**Barbatic acid** (STENHOUSE and GROVES),  
1880, T., 405.

**Barbituric acid** (*malonylurea*) (GRIM-  
MAUX), 1875, 752; 1879, A., 460;  
(CONRAD and GUTHZEIT), 1881, A.,  
1033.

action of cyanogen gas on (NENCKI),  
1873, 282.

amido- (*murazan*; *uramil*) (REOCH),  
1876, i., 569; (GRIMMAUX), 1879,  
A., 375, 460.

action of bromine on (MULDER),  
1881, A., 801.

bromamido- (MULDER), 1881, A., 801.

**Barcenite**, a new antimonate, from  
Huitzuco, Mexico (MALLET), 1879,  
A., 1022.

**Barite** crystals from the Last Chance  
Mine, Morgan Co., Missouri (BROAD-  
HEAD), 1877, ii., 713.

**Barium**, existence of, in all rocks of the  
primary formation (DIEULAFAIT),  
1879, A., 444.

preparation of (KERN), 1875, 1162;  
(FREY), 1877, i., 689; (DONATH),  
1879, A., 691.

volatility of (MALLET), 1876, ii., 354.

**Barium** aluminate, and basic halogen  
salts of barium (BECKMANN), 1882,  
A., 141.

arsenates, action of nitric acid on  
(DUVILLIER), 1876, i., 519.

**Barium** borates (DITTE), 1874, 129.

borodecitungstate (KLEIN), 1880, A.,  
612.

bromide, action of chlorine and of  
oxygen on (POTILIZIN), 1879, A.,  
770.

carbonate, action of sodium oxalate  
on (SMITH), 1877, ii., 219.

dissociation of (ISAMBERT), 1878,  
A., 373.

See also Witherite.

hydrogen carbonate, dissociation of  
(LEMOINE), 1881, A., 1096.

chloride, influence of temperature on  
the decomposition of, by potas-  
sium oxalate in aqueous solution  
(MUIR), 1880, T., 78.

action of oxygen on (POTILIZIN),  
1879, A., 770.

oxychloride (ANDRÉ), 1881, A., 979;  
(BECKMANN), 1882, A., 141.

chromate, crystalline (BOURGEOIS),  
1879, A., 437.

green pigment from (DOUGLAS),  
1879, A., 987.

dielchromate, preparation of (PREIS  
and RAYMAN), 1880, A., 444.

tellurium fluoride (HÖGBOM), 1881,  
A., 223.

hydroxide, heat of formation of (BER-  
THELOT), 1873, 1096.

action of carbon disulphide on  
(WALKER), 1874, 1135.

action of chlorine on (KONIGEL-  
WEISBERG), 1879, A., 505.

action of, on certain mineral and  
organic compounds in beetroot  
products (LAGRANGE), 1875, 675.  
as an absorbent of carbon dioxide  
(CLAËSSON), 1876, i., 959.

periodate, basic (CROSS and SUGUIRA),  
1878, T., 409; 1879, T., 118.

iodide, constitution of crystals of  
(THOMSEN), 1877, ii., 839.

oxyiodide (BECKMANN), 1882, A.,  
141.

nitrate, hydrated (BERRY), 1882, A.,  
13.

oxides, action of carbonic anhydride  
on (RAOULT), 1881, A., 878.

monoxide (*buryta*) (RAMMELSBERG),  
1874, 774.

in the ash of Egyptian wheat  
(DWORŽAK), 1875, 662.

in furnace dust (SCHWARZ), 1876,  
i., 796.

preparation of, from barium sul-  
phide (TESSIE DU MOTAY), 1873,  
414.

crystalline state of (BRÜGELMANN),  
1878, A., 471, 770.



**Barium monoxide** (*baryta*), action of, on oil of cloves (CHURCH), 1875, 113.  
 action of sulphurous anhydride on (BIRNBAUM and WITTICH), 1880, A., 606.  
*dioxide* (SCHÖNE), 1874, 127; (RAMMELSBERG), 1874, 774.  
 heat of formation of (BERTHELOT), 1876, i., 183.  
 dissociation of (BOUSSINGAULT), 1880, A., 610.  
 estimation of active oxygen in (BERTRAND), 1880, A., 744.  
 hydrated, composition of (SCHÖNE), 1880, A., 610.  
 spontaneous decomposition of (BERTHELOT), 1878, A., 107.  
*oxysulpharsenite* (NILSON), 1878, A., 13.  
 phosphates, action of nitric acid on (DUVILLIER), 1876, i., 519.  
*hypophosphite* (RAMMELSBERG), 1873, 5.  
 platinochloride, solubility of, in alcohol (PRECHT), 1880, A., 578.  
 silicate, crystallised (PISANI), 1877, i., 442.  
 crystalline hydrated (LE CHATELIER), 1881, A., 683.  
 sulphate, influence of the temperature of the voltaic arc on (EREMIN), 1882, A., 362.  
 solubility of, in concentrated sulphuric acid (VARENNE and PAULEAU), 1882, A., 465.  
 precipitation of (SLOANE), 1882, A., 97.  
 precipitates obtained in quantitative analyses, purification of (BRÜGELMANN), 1877, i., 737.  
 estimation of. See Barium, estimation.  
 See also Barytes.  
 thiocarbonate (THENARD), 1875, 143.  
*pentathionate* (LEWES), 1881, T., 73.  
**Barium organic compounds:**—  
 cyanide and its hydrates (JOANNIS), 1882, A., 484.  
 gold cyanides (LINDBOM), 1878, A., 131.  
 ferriocyanide (SCHULER), 1879, A., 702.  
**Barium, estimation and separation of:**—  
 estimation of, as chromate (PELLET), 1877, i., 227; (MORSE), 1881, A., 848.  
 estimation of, as sulphate, without filtering, washing and drying (POPPER), 1879, A., 480.

**Barium**, separation of, from strontium and calcium in the form of chromate (KAEMMERER), 1874, 1005; (MESCHTSCHERSKY), 1882, A., 997.  
**Barks**, direct detection of certain substances in, by chemical reagents (BÖTTGER), 1874, 715.  
**Barley**, organic constituents of (KÜHNEMANN), 1877, i., 224.  
 division of the nitrogen of, among the products of brewing (ZMERZLIKAR), 1876, ii., 345.  
 artificially manured, effect of, on the composition of the wort (LINTNER, KRANDAUER and TREIBER), 1879, A., 959.  
 malting, preservation of (MÜNTZ), 1882, A., 1014.  
 moisture in (SCHULTZE), 1880, A., 776.  
 analysis of (REISCHAUER), 1882, A., 672.  
 steeping of (MILLS and PERTIGREW), 1882, T., 38.  
 steeped, composition of (ULLIK), 1882, A., 645; (HEUT), 1882, A., 761; (MICHEL and JÄCKEL-HANDWERK), 1882, A., 1224.  
 examination of, for sugar and dextrin (KÜHNEMANN), 1875, 906.  
 estimation of, in oatmeal (PATTINSON and STEAD), 1877, i., 348.  
 See also Malt and Brewing, and Agricultural Chemistry.  
**Barley-extract**, coagulation of, at different temperatures (BROWN and HERON), 1879, T., 652.  
**Barometer** with self-registering apparatus (ANON.), 1873, 590.  
**Barometric pressure**, physiological action of (BERT), 1873, 643, 762, 1249; (v. LIEBIG), 1875, 1273.  
**Barsowite** (BAUER), 1881, A., 375.  
**Baryta**. See Barium monoxide.  
**Baryta-green** (ANON.), 1876, i., 128.  
 as a pigment (FLEISCHER), 1874, 1116.  
**Baryta-mica** (GROTH), 1875, 543.  
 from the Habachthal in Salzburg (v. SANDBERGER), 1876, i., 53.  
**Barytes** (*heavy-spar*; *eggonite*) (ROSTER), 1878, A., 282; (SCHRAUF), 1881, A., 236; (SJÖGREN), 1881, A., 698.  
 new locality of (ANON.), 1877, ii., 702.  
 from the basalt of the Finkenbergr, near Kindinghofen, opposite Bonu (vOM RATH), 1881, A., 551.  
 artificial formation of (SCHEERER and DRECHSEL), 1874, 234.

**Barytes** (*heavy-spar*; *eygonite*), influence of temperature on the coefficients of refraction of (ARZRUNI), 1878, A., 189.

use of, in the manufacture of glass (DONATH), 1880, A., 516.

detection of, in meal (BÖTTGER), 1879, A., 183.

See also Barium sulphate.

**Baryto calcite** from Långban (SJÖGREN), 1878, A., 942.

**Basalt**, solvent action of gypsum on (COSSA), 1873, 1202.

the occurrence of native iron in (STEENSTRUP), 1877, ii., 578.

minerals occurring in the cavities of (STRENG), 1875, 551.

of the Anekland Islands (HARTMANN), 1879, A., 903.

of Azklur on the Upper Kur (FRENZEL), 1880, A., 615.

of Clermont-Ferrand (Auvergne), vanadium and titanium in (ROUSSEL), 1874, 137.

of the Persanyer Gebirge, mineral and rock enclosures in (KOCU), 1881, A., 703.

from Reps in Transylvania, on the bombs ("Auswürflinge") in (SCHUSTER), 1881, A., 703.

of Rossdorf, Darmstadt (PETERSEN), 1873, 1211.

of the Schiffenberg, near Giessen (WINTER and WILL), 1877, ii., 579.

of Sicily (RICCIARDI and SPECIALE), 1882, A., 152.

Silesian, and their mineral constituents (TRIPPKE), 1880, A., 19.

of Styria (UNTCH), 1873, 1115.

phosphates of the (BOŘICKÝ), 1874, 236.

microscopic examination and description of a collection of (MÖHL), 1875, 551.

columnar separation of (LANG), 1876, i., 526.

**Base**, a new (SMITH), 1880, A., 387.

a new, in the animal organism (SCHREINER), 1879, A., 72.

new, analogous to neurine (WURTZ), 1882, A., 1303.

from a piperidine derivative (SCHOTEN), 1882, A., 982.

$C_7H_7NS$  from chlorophenylthiocarbimide (v. HOFMANN), 1880, A., 388.

$C_7H_7N$  (NIETZKI), 1878, A., 792.

$C_7H_{15}N$  (v. HOFMANN), 1881, A., 621.

$C_{13}H_{10}N_2$  from nitrobenzanilide (HÜBNER and RETSCHY), 1873, 1147; 1874, 78.

**Base**,  $C_{13}H_{13}N$  from aniline tailings (JACKSON), 1876, i., 266; 1877, ii., 606, 762.

$C_{11}H_{11}N$  (BERNTHSEN), 1878, A., 789.

$C_{17}H_{22}N_{21}$  and its derivatives (FISCHER), 1881, A., 587.

$C_{19}H_{13}N$  and its salts (BERNTHSEN), 1878, A., 789.

$C_{19}H_{18}N_2$  (BÖTTINGER), 1878, A., 506, 723; 1879, A., 716.

$C_{21}H_{24}N_2O_2$ , green (FISCHER), 1881, A., 587.

**Bases**,  $C_nH_{2n-3}ClN_2$  (WALLACH and OPPENHEIM), 1878, A., 55.

anhydrous (HÜBNER), 1878, A., 143; 1881, A., 1130; 1882, A., 180, 503.

action of anhydrous acids on (BÉCHAMP), 1878, A., 108.

from acid amides (WALLACH and KAMENSKI), 1880, A., 547;

(WALLACH), 1882, A., 958.

from aldol-ammonia (WURTZ), 1879, A., 704, 780.

from fusel oil (SCHRÖTTER), 1880, A., 234.

found in putrefaction products (NENCKI), 1882, A., 1307.

from quinoline and the alkyl chlorides and iodides, additive products of (LA COSTE), 1882, A., 1112.

isomeric, with lepidine (SKRAUP), 1881, A., 919.

of the oxalic series (WALLACH and SCHULZE), 1880, A., 547; 1881, A., 572.

absorption of, by the soil (ARMSBY), 1877, ii., 913; 1878, A., 913.

**Bases, aromatic**, a series of, isomeric with the thiocarbimides (v. HOFMANN), 1880, A., 387.

salts of, action of, on chloral (WALLACH), 1875, 350.

action of, on nitrosophenol and nitrosodimethylaniline (KIMICH), 1876, i., 268.

condensation products of (FISCHER), 1877, i., 465; ii., 607; 1878, A., 51;

1881, A., 587; 1882, A., 392, 833.

tertiary, condensation of, by nitric oxide (LIPPMANN and LANGE), 1881, A., 161.

ferro- and ferri-cyanides of certain (WURSTER and ROSER), 1880, A., 98.

compounds of benzotrichloride with (DOEBNER), 1878, A., 873; 1880, A., 239, 644; 1881, A., 165; 1882, A., 956.

**Bases, non-oxygenised**, formation of (WALLACH), 1874, 984; (WALLACH and BOEHRINGER), 1875, 565.

- Bases, organic**, power of, to hinder oxidation (BINZ), 1875, 649.  
 containing oxygen, synthesis of (STAEDEL and SIEPERMANN), 1880, A., 639; 1881, A., 722.  
 compounds of bismuth iodide with (KRAUT), 1882, A., 528.  
 compounds of, with mercuric chloride (KLEIN), 1878, A., 667; 1879, A., 231.  
 phosphotungstic acid as a precipitant for (SCHEIBLER), 1874, 192.  
 volatile, a series of (TREADWELL), 1881, A., 895.
- Bases, pathological** (SELM), 1882, A., 741.
- Bases.** See also Alkaloids and Amines.
- Basic slag.** See Slag, basic.
- Bassia longifolia* (RICHE and RÉMONT), 1880, A., 519.
- Bast fibres**, chemistry of (CROSS and BEVAN), 1880, A., 666; 1881, A., 1121; 1882, T., 90.
- Bastin** (CROSS and BEVAN), 1882, T., 102.  
 chloro- (CROSS and BEVAN), 1882, T., 109.
- Bastite** (PISANI), 1876, ii., 610; 1877, ii., 719.
- Bastnäsite** from Colorado (ALLEN and COMSTOCK), 1881, A., 364.
- Bastose** (CROSS and BEVAN), 1882, T., 102.
- Batrachians**, formation of pepsin in (v. ŚWIECICKI), 1877, i., 100.
- Battery.** See Electrochemistry.
- Bauxite** (FISCHER), 1881, A., 990.  
 use of, for lining smelting furnaces (SIEMENS), 1873, 672.  
 analysis of (SIEMENS), 1873, 673.
- Beans.** See Agricultural Chemistry.
- Beans, soja.** See Soja bean.
- "Beckerite"** (PIESZCZEK), 1881, A., 687.
- Beech.** See Agricultural Chemistry.
- Beech wax** (FLÜCKIGER), 1876, i., 615.
- Beef, corned**, of the St. Louis Canning Company, analysis of (WIGNER), 1881, A., 211.
- Beegerite**, a new mineral (KÖNIG), 1882, A., 575.
- Beer**, manufacture of unalterable (PASTEUR), 1874, 299.  
 manufacture of, from beetroot and malt (ANON.), 1874, 725.  
 use of maize in the preparation of (ANON.), 1881, A., 330.  
 effect of hard and soft water on the brewing of (SOUTHEY), 1880, A., 593.  
 fermentation of (MULLER and HAUER), 1878, A., 913; 1879, A., 1079.
- Beer**, clarifier for (GRIESSMAYER), 1880, A., 931.  
 influence of oxygen on the clarifying of (HOLZBECHER), 1881, A., 951.  
 freezing point of (RAOULT), 1880, A., 523.  
 influence of light on (NEY), 1880, A., 200; (BECKH), 1882, A., 122.  
 influence of malt on the quality and keeping properties of (LINTNER), 1881, A., 1090.  
 boric acid as a preservative of (HIRSCHEBERG), 1873, 100.  
 characters of the normal constituents of, as tested by the Stas-Otto and Dragendorff methods (MODDERMAN), 1877, ii., 809.  
 carbonic anhydride in (LANGER and SCHULZE), 1880, A., 774.  
 phosphoric acid in (HOLZNER), 1879, A., 1079.  
 salt in (GATEHOUSE), 1877, ii., 940.  
 sulphuric acid in (REISENBICHLER), 1882, A., 556.  
 crystalline precipitate produced in, on the addition of potassium carbonate (METZ), 1873, 658.  
 substance in, resembling cinchonine (VAN GELDERN), 1877, i., 325.  
 prevention of the occurrence of lactic acid in (JÄCKEL-HANDWERK), 1881, A., 857.  
 acidity of (REICHARDT), 1878, A., 347; (GRIESSMAYER), 1878, A., 541.  
 influence of, on digestion (FLEISCHER), 1881, A., 752.  
 reducing power of (STEINER), 1882, A., 1137.  
 Austrian, analysis of (KOHLEAUSCH), 1875, 1304.  
 Berlin, Hanoverian, Munich, and Nassau, composition of (ANON.), 1879, A., 842.  
 Braga, preparation of (ČECH), 1881, A., 857.  
 English, analysis and composition of (POOLEY), 1880, A., 353.  
 Hamburg, analyses of (NIEDERSTADT), 1880, A., 833.  
 Speyer, analysis of (HALENKE), 1880, A., 773.  
 standards of value for (ESTCOURT), 1879, A., 290.  
 detection of adulterations in (WITTSTEIN), 1876, i., 767.  
 containing buxine, is it to be regarded as adulterated? (HAGER), 1878, A., 456.

**Beer**, analysis of (GOPPELSROEDER), 1876, i., 768; (HILGER), 1877, ii., 232; (HAARSTICK), 1877, ii., 372; (REISCHAUER), 1877, ii., 953; (SCHMIDT), 1878, A., 755; (ANON.), 1879, A., 842.

detection of foreign bitters in (DRAGENDORFF), 1874, 818; 1882, A., 103.

detection of picric acid in (BRUNNER), 1874, 1017; (VITALI), 1877, ii., 232.

detection of picrotoxin in (BLAS), 1873, 94.

detection of salicylic acid in (BLAS), 1879, A., 343.

estimation of alcohol in, by means of the ebullioscope (WAAGE), 1879, A., 1065.

estimation of calcium sulphate in (WILSON), 1879, A., 79.

estimation of the extract-contents of (KNAB), 1873, 95, 655.

estimation of glycerol in (CLAUSNIZER), 1881, A., 470; 1882, A., 557.

estimation of glycerol and hop-resin in (GRIESSMAYER), 1878, A., 449.

**Beer-coolers** of zinc (VOHL), 1873, 958.

**Beer-mash**, malt extract and maltose in (SCHULTZE), 1880, A., 776.

**Beer-wort**. See Wort.

**Beer-yeast**. See Yeast.

**Bees**, activity of (ERLENMEYER and v. PLANTA), 1880, A., 415, 725.

**Bees'-wax**. See Wax.

**Beet-juice**, process for purifying and decolorising (TESSIE DU MOTAY), 1873, 424.

purification of, by lime (PELLET; NORD), 1882, A., 672.

purification of, by means of sulphurous anhydride and filtration through gravel (ANON.), 1881, A., 951; 1882, A., 1337.

mineral substances in, and the potash extracted from it (PELIGOT), 1875, 379.

occurrence of tricarballic and aconitic acids in (v. LIPPMANN), 1878, A., 662; 1880, A., 36.

fermentations produced in preparing syrups from, by diffusion (MILLOT and MAQUENNE), 1880, A., 519, 931.

estimation of mineral constituents in (BORODULIN), 1874, 293.

estimation of sugar in (BITTMANN), 1880, A., 144.

See also Beet syrup, and Sugars under Carbohydrates.

**Beet molasses**. See Molasses.

**Beet mucilage**. See under Gmm.

**Beet spirit**, purification of (SALZER), 1882, A., 1335.

**Beet sugar**. See Sucrose under Carbohydrates.

**Beet syrup**, extraction of, from beetroot (HEEREN), 1874, 397.

purification of (POKORNY), 1879, A., 844.

See also Beet juice.

**Beet wine** (LEFORT), 1882, A., 1336.

**Beet-red**, detection of, in wine (GAUTIER), 1877, ii., 937.

**Beetroot**. See Agricultural Chemistry.

**Beetle eudiometer** (MÜLLER-ERZBACH), 1873, 292.

**Belladonna**, absorption spectra of solutions of (HOCK), 1882, A., 349.

alkaloids from (LADENBURG), 1880, A., 561; (BRETET), 1880, A., 425; (SCHMIDT), 1881, A., 293; (BUDDEL), 1882, A., 1126.

leaves, preparation of atropine from (LEFORT), 1874, 701.

roots, importance of starch in (BUDDEL), 1882, A., 1126.

**Belladonnine** (KRAUT), 1880, A., 410.

**Benzacin** (FRANKLAND and TOMPKINS), 1880, T., 569.

"**Benzacrylic acid**," formation of, by distillation of a mixture of barium benzoate and thiocyanate (PEAN-KUCH), 1873, 363.

**Benzal**. See Benzylidene.

**Benzaldehyde**, preparation of (ANON.), 1881, A., 423.

transformation of benzamide into (GUARESCHI), 1875, 569.

action of acetone on, in presence of alkaline solutions (SCHMIDT), 1881, A., 889; (CLAISEN), 1882, A., 513.

action of aminonium thiocarbamate on (MULDER), 1874, 47.

action of boron fluoride on (LANDOLPH), 1877, ii., 863; 1878, A., 482.

action of, on dimethylaniline (FISCHER), 1878, A., 52.

action of, on dimethyltoluidines (FISCHER), 1880, A., 636.

condensation of, with ethylic acetate and malonate (CLAISEN), 1881, A., 405.

action of nascent hydrocyanic acid on (SPIEGEL), 1881, A., 277.

action of, on *o*-tolylenediamine (LADENBURG), 1877, ii., 753.

compounds of, with acetone and methylic oxide (CLAISEN and CLAPARÈDE), 1881, A., 422.

compound of, with benzoic bromide (CLAISEN), 1882, A., 514.



- Benzaldehyde**, compounds of, with the sulphites of amidoacetic and amido-benzoic acids (SCHIFF), 1882, A., 304.
- cyanhydrin (TIEMANN and FRIEDLÄNDER), 1882, A., 56.
- acids from (PERKIN), 1877, i., 389.
- hydrobenzoin from (FORST and ZINCKE), 1875, 453.
- Benzaldehyde**, *p*-bromo-, and *p* chloro- (JACKSON and WHITE), 1878, A., 723.
- nitro- (FITTICA), 1878, A., 65; 1879, A., 152.
- o*-nitro- (FRIEDLÄNDER and HENRIQUES), 1882, A., 840.
- action of nascent hydrogen on (RUDOLPH), 1880, A., 469.
- action of dimethylaniline on (FISCHER), 1882, A., 834.
- m*-nitro-, action of aniline hydrochloride and zinc chloride on (FISCHER and ZIEGLER), 1880, A., 662.
- p*-nitro- (FISCHER), 1882, A., 393.
- action of aniline sulphate, *o*-toluidine, and *o*-anisidine on (FISCHER), 1882, A., 833.
- action of a mixture of aniline hydrochloride and zinc chloride on (FISCHER and GRIFF), 1880, A., 640.
- thio-, and the action of potash on (BÖTTINGER), 1879, A., 791.
- Benzaldehydes**, substituted (JACKSON and WHITE), 1878, A., 728.
- Benzaldehyde mono- and di-phenylhydrazone** (*benzylidene-mono- and di-phenylhydrazine*) (FISCHER), 1878, A., 309, 313.
- Benzaldehyde-green**. See Malachite-green under Colouring matters.
- Benzaldehydesulphinic acid**, 4-bromo- (BÖTTINGER), 1877, i., 468; 1878, A., 730.
- Benzaldoxime**, bromo-*o*-nitro- (GABRIEL and MEYER), 1881, A., 730.
- o*-nitro- (*nitrosomethyl-o-nitrobenzene*) (GABRIEL and MEYER), 1882, A., 188.
- m*-nitro- (GABRIEL), 1882, A., 1070.
- Benzam-**. See Carboxyphenyl-.
- Benzamide**, crystalline form of (KLEIN), 1873, 585.
- action of phosphorus pentachloride on (WALLACH), 1875, 884.
- transformation of, into benzylic alcohol and benzaldehyde (GUARESCHI), 1875, 569.
- compound of, with mercuric oxide (OPPENHEIM and V. CZARNOMSKY), 1874, 272.
- Benzamide**, *m*-amidothio-, action of iodine on (WANSTRAT), 1873, 909.
- nitro- (STRAKOSCH), 1874, 78.
- o*-nitro- (HÜBNER), 1878, A., 140.
- thio- (BERNTHSEN), 1878, A., 70, 790.
- action of nascent hydrogen on (BERNTHSEN), 1877, ii., 887.
- Benzamidine** (*benzimidamide*) and its hydrochloride (PINNEN and KLEIN), 1878, A., 142, 491.
- Benzamidoacetic acid**. See Hippuric acid.
- Benzamidobenzoic acids**, *o*- and *p*- (BRÜCKNER), 1881, A., 94.
- p*-**Benzamidobenzophenone** (DOEBNER and WEISS), 1882, A., 176.
- p*-**Benzamidodiphenyl** (LÜDDENS), 1875, 1258; (ZIMMERMANN), 1881, A., 176.
- Benzamidoethylene-*o*-nitrophenyl oxide** (WEDDIGE), 1881, A., 1138.
- p*-**Benzamidophenol** (HÜBNER), 1882, A., 505.
- Benzamidophenols** (MORSE), 1875, 272.
- Benzamidophenolsulphonic acids** and their salts (POST and HOLST), 1880, A., 642.
- Benzotriamidotoluene** and its salts (HÜBNER), 1881, A., 1132.
- Benzamido-*p*-toluidide**, *o*-chloro-. See Benzotolylenediamine, *o*-chloro-.
- Benzanilide** (MEINECKE), 1875, 900; (PAULY), 1877, ii., 614.
- fusion point of (FRANKLAND and LOUIS), 1880, T., 745.
- action of phosphorus pentachloride on (WALLACH and HOFFMANN), 1877, ii., 187.
- action of succinic chloride on (HÜBNER), 1878, A., 407.
- hydrocyanide (ČECH), 1878, A., 408.
- Benzanilide**, amido-. See Benzophenylenediamine.
- diamido-* (MACHUGH), 1875, 271.
- p*-bromo- (HÜBNER), 1878, A., 149.
- 2:4-di-bromo-, 2:4-bromamido-, 2:4- and 4:2-bromonitro-, and *p*-bromo-*dinitro-* (HÜBNER), 1878, A., 142.
- iodo- (HÜBNER), 1878, A., 143.
- 2:4-di-iodo- (RUDOLPH), 1878, A., 423.
- nitro-, base obtained from (HÜBNER and RETSCHY), 1873, 1147; 1874, 78.
- m*-nitro- (ENGLER and VOLKHAUSEN), 1875, 643; (HÜBNER), 1876, ii., 309.
- reduction of (BELL), 1874, 900.
- o*- and *p*-nitro- (STRÖVER), 1874, 806; 1875, 271.
- o*-, *m*-, and *p*-nitro- (HÜBNER), 1878, A., 142; 1881, A., 1130.

- Benzanilide**, *dinitro-* (MACHUGH), 1875, 270.  
*trinitro-* (HÜBNER), 1878, A., 142.  
*thio-* (BERNTSEN), 1878, A., 70, 585, 790; (LEO), 1878, A., 409; (V. HOFMANN), 1878, A., 585.
- Benzanilidoimide chloride**, action of phenol on (WALLACH and LIEBERMANN), 1880, A., 558.
- Benzaniline**. See **Benzophenone**, *p*-amido-.
- o-Benzaniside** (MÜHLHÄUSER), 1882, A., 302.
- Benzanisylbenzhydroxylamine** (LOSSEN), 1875, 634; 1877, ii., 328.
- Benzanisylethylhydroxylamine** (*ethyl anisylbenzhydroxamate*) (EISELER), 1875, 767.
- Benzanisylhydroxylamine** (LOSSEN), 1874, 254; 1875, 634; 1877, ii., 328.
- p-Benz-arsenious and -arsinic acids** and their salts (LA COSTE), 1881, A., 168, 903.
- "**Benzaurin**" (DOEBNER), 1880, A., 239.
- Benzcreatines**. See **Benz- $\alpha$ - and - $\beta$ -methylglycocyanines**.
- "**Benzcyanidine**" (FRANKLAND and LOUIS), 1880, T., 743.
- Benzdianisylhydroxylamine** (LOSSEN), 1877, ii., 328.
- Benzdiethylhydroxylamine** (LOSSEN and ZANNI), 1877, i., 188; (GÜRKE), 1881, A., 571.
- m-Benzdihydroxyanthraquinone** (ROSENSTIEHL), 1876, ii., 517; 1879, A., 383; (SCHUNCK and ROEMER), 1878, A., 77, 984; 1879, A., 68.
- Benzene**, presence of, in coal-gas (BERTHELOT), 1877, ii., 447.  
 occurrence of, in resin light oils (SMITH), 1876, ii., 29.  
 preparation of, from crude benzene (ANON.), 1879, A., 571.  
 preparation of, from brown coal-tar oil (SALZMANN and WICHELHAUS), 1878, A., 860.  
 synthesis of (V. RICHTER), 1880, A., 37.  
 constitution of (LADENBURG), 1875, 1188; 1876, i., 401; 1877, ii., 747; (RIILLET and ADOR), 1876, i., 383; (VAN'T HOFF), 1877, ii., 190; (THOMSEN), 1881, A., 89, 159, 495; 1882, A., 721; (WROBLEWSKI), 1882, A., 952; (CLAUS; WARDER), 1882, A., 1196.  
 regarded as methylpentol (ADRIANSZ), 1873, 885.  
 and its derivatives, cause of absorption bands in the spectra transmitted by (HARTLEY), 1881, T., 165.
- Benzene**, electrolysis of (RENARD), 1880, A., 802.  
 heat of combustion of (THOMSEN), 1881, A., 135; 1882, A., 721.  
 action of heat on (BERTHELOT), 1875, 760; (CARNELLEY), 1880, T., 701.  
 action of heat on the mixed vapours of toluene and (CARNELLEY), 1880, T., 701.  
 congelation of solutions of neutral compounds in (RAOULT), 1882, A., 1260.  
 specific gravities of (PISATI and PATERNO), 1874, 687.  
 specific volume of (RAMSAY), 1879, T., 469.  
 distillation of (NARMANN), 1878, A., 47; (BROWN), 1881, T., 527.  
 distillation of mixtures of carbon disulphide and of dibromethane and (BROWN), 1881, T., 523.  
 volume of mixtures of carbon tetrachloride and disulphide, and of dibrom- and dichlor-ethane (BROWN), 1881, T., 205.  
 laws of substitution in (NÖLTING), 1877, ii., 324.  
 replacement of hydrogen in (HÜBNER), 1875, 1257.  
 comparison of dipropargyl and (BERTHELOT and OGIER), 1881, A., 719.  
 illuminating power of (KNULLAUCH), 1881, A., 329.  
 luminosity of, when burnt with non-luminous combustible gases (FRANKLAND and THORNE), 1878, T., 89.  
 characteristic differences between petroleum spirit and (ALLEN), 1879, A., 1063.  
 exsiccator for (ANON.), 1879, A., 875.  
 action of amylene and its hydrochloride on, in presence of aluminium chloride (ESSNER), 1882, A., 46.  
 action of amyl chloride on (ROSER), 1881, A., 731.  
 action of antimony trichloride on (SMITH), 1876, ii., 30; 1877, ii., 551; 1879, T., 309; (SMITH and DAVIS), 1882, T., 411.  
 action of bromal and chloral on (V. BAEYER), 1873, 885; (GOLDSCHMIEDT), 1874, 150.  
 action of chloraldehyde on (IEFF), 1874, 368.  
 action of trichloroacetic chloral on (IEFF), 1875, 362.  
 action of dichlorethyl oxide on, in presence of aluminium chloride (WAAS), 1882, A., 1209.  
 action of chromyl dichloride on (ETARD), 1881, A., 583.

**Benzene**, action of ethylene on, in presence of aluminium chloride (BALSOHN), 1879, A., 785.  
 action of ethylic chloride on, in presence of aluminium chloride (ALBRIGHT, MORGAN and WOOLWORTH), 1878, A., 663.  
 action of ethylic chloroformate on, in presence of aluminium chloride (RENNIE), 1882, T., 33.  
 action of formaldehyde on (v. BAEYER), 1873, 884.  
 action of ozone, nascent oxygen, and hydrogen peroxide on (LEEDS), 1881, A., 719, 899.  
 action of oxygen and sulphur on (FRIEDEL and CRAFTS), 1878, A., 670.  
 action of hydrogenised palladium on (LEEDS), 1881, A., 899.  
 action of paraldehyde on (v. BAEYER), 1875, 148.  
 action of phosphorus trichloride on (KÖHLER), 1881, A., 91.  
 action of potassium on (ABELJANZ), 1873, 382; 1876, i., 703.  
 action of stannic chloride on (SMITH), 1876, ii., 31; 1877, ii., 552; (ARONHEIM), 1877, ii., 324.  
 action of sulphur chloride on (SCHMIDT), 1878, A., 975.  
 action of sulphuryl chloride on (BÖTTINGER), 1878, A., 863.  
 chlorination of, by means of molybdenum pentachloride (ARONHEIM), 1876, i., 391.  
 hydrogenation of (WREDEN), 1877, ii., 445; (BERTHELOT), 1879, A., 376.  
 methylation of, by methyl and aluminium chlorides (ADOR and RILLIET), 1879, A., 228, 527; (JACOBSEN), 1882, A., 390.  
 oxychlorination of (KRAFFT), 1877, ii., 748.  
 crude volatile products in (VINCENT and DELACHANAL), 1878, A., 392; (SMITH), 1881, A., 1128.  
 compounds of aluminium chloride with (GUSTAVSON), 1879, A., 308, 461.  
 compound of azobenzene with (SCHMIDT), 1873, 499.  
 investigation of the first products obtained in the manufacture of (HELBING), 1875, 49.  
 commercial, elimination of carbon disulphide from (NICKELS), 1881, A., 770, 950.  
 test for (v. BAEYER), 1879, A., 937.

**Benzene derivatives** (KÖRNER), 1876, i., 204.  
 constitution of (PETERSEN), 1873, 1132; 1874, 466; (SALKOWSKI), 1873, 1134; (WROBLEWSKI), 1875, 58, 886; 1876, ii., 510; 1878, A., 977; (WURSTER), 1875, 756; 1879, A., 526.  
 constitution of some (WURSTER and NÖLTING), 1876, i., 389.  
 crystalline forms of (PANEBIANCO), 1880, A., 105.  
 isomerism of (KÖRNER), 1876, i., 204; (HÜBNER), 1879, A., 380.  
 regularity of the relations in physical properties of isomeric (KÖRNER), 1876, i., 237.  
 influence exerted by the nature of the displacing groups in the conversion of mono- into di-derivatives (KÖRNER), 1876, i., 239.  
 isomeric series of (v. RICHTER), 1873, 1224.  
 nitrogenous methylated, oxidation of (BRÜCKNER), 1881, A., 93.  
 connection between phenols and (BEILSTEIN and KURBATOFF), 1875, 362.  
 isomeric di-derivatives (LADENBURG), 1875, 887.  
 constitution of (WURSTER), 1875, 756; (KÖRNER), 1876, i., 232.  
 connection between the di- and tri-derivatives of (BÖTTINGER), 1875, 567.  
 homologues, distillation of (BROWN), 1881, T., 527.  
 action of bromine in presence of aluminium bromide on (GUSTAVSON), 1878, A., 972.  
 hydrogenisation of (WREDEN), 1877, ii., 445.  
 ortho-homologues of, condensation-products of the (RAYMAN), 1877, i., 459.  
**Benzene**, amido-. See Aniline.  
*diamido-*. See Phenylenediamine.  
*triamido-*, constitution of (SALKOWSKI), 1873, 280.  
 derivatives of (SALKOWSKI), 1878, A., 140.  
 amido-, substituted, action of sulphuric acid on (POST), 1881, A., 91.  
 bromo-derivatives, action of sulphuric acid on (HERZIG), 1882, A., 46.  
 bromo- (*phenylic bromide*) (ADRIANSEN), 1873, 886.  
 preparation of (GREENE), 1880, A., 316.

- Benzene**, bromo- (*phenylic bromide*),  
 action of aluminium chloride on  
 (v. DUMREICHER), 1882, A., 606.  
 action of, on aniline (MERZ and  
 WEITH), 1873, 73.  
 action of chromyl dichloride on  
 (ETARD), 1881, A., 583.  
 action of chlorosulphonic acid on  
 (BECKURTS and OTTO), 1879, A.,  
 229.  
 action of, on the animal system  
 (JAFFÉ), 1879, A., 796; (BAU-  
 MANN and PREUSSE), 1879, A.,  
 803.  
 action of sodium on a mixture of  
 carbon tetrachloride and (GUAR-  
 ESCHI), 1878, A., 126.  
*o*-dibromo- (RIESE), 1873, 63.  
*m*-dibromo-, conversion of dinitro-  
 benzene into (WURSTER and  
 GRUBENMANN), 1874, 691.  
 derivatives of (WURSTER), 1874, 369.  
*p*-dibromo- (ZINCKE and SINTENIS),  
 1873, 640; (ASCHENBRANDT),  
 1879, A., 920.  
 action of chromyl dichloride on  
 (ETARD), 1881, A., 583.  
 crystalline, action of sodium on  
 (RIESE), 1873, 62.  
 action of sodium ethoxide on (BAL-  
 BIANO), 1882, A., 168.  
*m*- and *p*-dibromo- (LIMPRICHT), 1878,  
 A., 220.  
*o*-, *m*-, and *p*-dibromo- (WURSTER),  
 1874, 369; (MEYER), 1875, 758;  
 (KÖRNER), 1876, i., 212.  
 action of bromine and water on  
 (WROBLEWSKI), 1878, A., 978.  
 1:2:4-tribromo- (LIMPRICHT), 1878,  
 A., 978.  
 1:3:5-tribromo- (LIMPRICHT), 1878,  
 A., 220, 495.  
 action of nitric acid on (WURSTER  
 and BÉBAN), 1880, A., 106.  
 derivatives of (JACKSON), 1876, i.,  
 390.  
 isomeric tribromo-, preparation and  
 properties of (KÖRNER), 1876, i.,  
 223.  
 tetrabromo- (HERZIG), 1882, A., 47.  
 1:2:4:5-tetrabromo- (MEYER), 1882,  
 A., 606.  
 1:3:4:5-tetrabromo- (WURSTER and  
 NÖLTING), 1876, i., 389; (v.  
 RICHTER), 1876, i., 390; (LIM-  
 PRICHT), 1878, A., 220, 496.  
 preparation of (KÖRNER), 1876, i.,  
 212.  
 hexabromo- (MERZ and WEITH), 1877,  
 ii., 867; (GUSTAVSON), 1878, A.,  
 973; (HERZIG), 1882, A., 47.
- Benzene**, perbromo- (MERZ and WEITH),  
 1879, A., 303.  
 bromamido-. See Aniline, brom-  
*o*-, *m*-, and *p*-bromido-, preparation  
 and properties of (KÖRNER), 1876,  
 i., 215.  
 isomeric bromidonitro-, preparation  
 and properties of (KÖRNER), 1876,  
 i., 221.  
*p*-bromonitro- (SPIEGELBERG), 1879,  
 A., 796.  
 reduction of (FITTIG), 1875, 643.  
*o*-, *m*-, and *p*-bromonitro-, preparation  
 and properties of (KÖRNER), 1876,  
 i., 212.  
 bromodinitro- (AUSTEN), 1876, i.,  
 389.  
 4:1:3-bromodinitro- (ZINCKE and  
 SINTENIS), 1873, 167; (SPIEGEL-  
 BERG), 1879, A., 796.  
 isomeric bromodinitro- and dibromo-  
 nitro-, preparation and properties  
 of (KÖRNER), 1876, i., 208.  
 isomeric dibromodinitro-, and their  
 derivatives (AUSTEN), 1876, i.,  
 389; ii., 406, 513; 1879, A., 50.  
 preparation of (KÖRNER), 1876, i.,  
 231.  
 tribromonitro- (SPIEGELBERG), 1879,  
 A., 800.  
 2:4:6-tribromonitro- (JACKSON), 1876,  
 i., 390; (LIMPRICHT), 1878, A.,  
 221; (WURSTER and BÉBAN), 1880,  
 A., 106.  
 3:4:5-tribromonitro-, crystallographic  
 constants of (LA VALLE), 1880, A.,  
 384.  
 isomeric tribromonitro-, preparation  
 and properties of (KÖRNER), 1876,  
 i., 224.  
 2:4:6-tribromo-1:3-dinitro- (JACK-  
 SON), 1876, i., 390; (WURSTER and  
 BÉBAN), 1880, A., 106.  
 isomeric tribromodinitro-, preparation  
 and properties of (KÖRNER), 1876,  
 i., 227.  
 bromonitramido-. See Aniline, bromo-  
 nitro-  
 chloro-derivatives, structural formulæ  
 of (WROBLEWSKI), 1879, A., 526.  
 chloro- (*phenylic chloride*) (ADRIA-  
 ANSZ), 1873, 886; (SCHMIDT),  
 1878, A., 975.  
 decomposition of, by heat (KRA-  
 MERS), 1877, ii., 885.  
 action of chlorosulphonic acid on  
 (BECKURTS and OTTO), 1879, A.,  
 229.  
 acids produced by the introduction  
 of, into the animal system  
 (JAFFÉ), 1879, A., 796.



**Benzene**, *o*-dichloro-, conversion of, into dichloraniline melting at  $71^{\circ}5$  (BEILSTEIN and KURBATOFF), 1875, 1037.

*m*-dichloro- (WITT), 1875, 759.

formation of chloronitraniline from (BEILSTEIN and KURBATOFF), 1875, 1037.

*p*-dichloro- (NÖLTING), 1876, i., 81; (KÖHLER), 1881, A., 98.

isomeric dichloro- (BEILSTEIN and KURBATOFF), 1875, 450; 1876, ii., 631; (KÖRNER), 1876, i., 215.

trichloro-, action of copper on (HANNHART), 1879, A., 714.

1:2:4-trichloro-, from dichlorophenol melting at  $42^{\circ}$ – $43^{\circ}$  (BEILSTEIN and KURBATOFF), 1875, 1037.

1:3:5-trichloro- (KÖRNER), 1876, i., 224; (WENGHÖFFER), 1878, A., 297.

isomeric trichloro- (BEILSTEIN and KURBATOFF), 1877, i., 706.

isomeric tetrachloro- (BEILSTEIN and KURBATOFF), 1876, ii., 294; 1877, i., 707; 1879, A., 143.

pentachloro- (LADENBURG), 1873, 166, 499.

*v*-chlorobromo-, preparation of (KÖRNER), 1876, i., 215.

isomeric chlorobromonitro-, preparation and properties of (KÖRNER), 1876, i., 220.

*o*- and *p*-chloriodo-, preparation of (KÖRNER), 1876, i., 215.

isomeric chloriodonitro-, preparation of (KÖRNER), 1876, i., 221.

*m*-chloronitro- (LAUBENHEIMER), 1875, 452; 1876, i., 577; (BEILSTEIN and KURBATOFF), 1876, i., 391; 1878, A., 974.

*p*-chloronitro- (BEILSTEIN and KURBATOFF), 1875, 1037.

action of alcoholic potash on (WILLGERODT), 1882, A., 953.

*o*-, *m*-, and *p*-chloronitro-, constitution of (KÖRNER), 1876, i., 234.

2:5-dichloronitro-, action of an alcoholic solution of potassium hydroxide on (LAUBENHEIMER), 1875, 759.

isomeric dichloronitro-, preparation and properties of (KÖRNER), 1876, i., 219; (BEILSTEIN and KURBATOFF), 1876, ii., 632.

action of hydrogen sulphide on (BEILSTEIN and KURBATOFF), 1879, A., 231.

chlorodinitro-, action of phenol and caustic potash on (MAIKOPAR), 1873, 1026.

**Benzene**, chloro-*a*-dinitro-, reactions of (WILLGERODT), 1876, ii., 405; 1877, i., 90, 473; 1878, A., 141, 570; 1879, A., 714.

4:1:2-chlorodinitro- and its derivatives (LAUBENHEIMER), 1876, ii., 294.

action of ammonia on (LAUBENHEIMER), 1878, A., 405.

action of hydrogen sulphide on (BEILSTEIN and KURBATOFF), 1879, A., 231.

action of sodium sulphite on (LAUBENHEIMER), 1882, A., 953.

4:1:3-chlorodinitro-, action of hydrogen sulphide on (BEILSTEIN and KURBATOFF), 1879, A., 230.

reduction of (BEILSTEIN and KURBATOFF), 1879, A., 376.

derivatives of (LEYMANN), 1882, A., 1057.

isomeric dichlorodinitro-, preparation of (KÖRNER), 1876, i., 209.

cyano- (FRANKLAND and TOMPKINS), 1880, T., 568.

*m*-dicyano- (*isophthalonitrile*) (BARTH and SENHOFER), 1876, i., 585.

$\alpha$ - and  $\beta$ -diacyano- (KÖRNER and MONSELISE), 1877, i., 81.

tricyano-, formation of, from dibromobenzenesulphonic acid (WÖLZ), 1873, 1143.

iodo- (*phenylic iodide*), preparation of (GREENE), 1880, A., 316.

action of nitric acid on (KÖRNER), 1876, i., 211.

*o*-, *m*-, and *p*-diiodo-, constitution of (KÖRNER), 1876, i., 233.

*o*-, *m*-, and *p*-iodonitro-, preparation and properties of (KÖRNER), 1876, i., 211.

2:4-diiodonitro-, preparation and properties of (KÖRNER), 1876, i., 222.

crystallographic constants of (LA VALLE), 1880, A., 384.

2:1:3-iododinitro-, crystallographic constants of (LA VALLE), 1880, A., 384.

2:1:3- and 4:1:3-iododinitro-, preparation and properties of (KÖRNER), 1876, i., 211.

nitro-derivatives of, action of sulphuric acid on (POST), 1881, A., 91.

nitro-, in spirituous liquors (DEBRUNNER), 1878, A., 542.

ebullition volume of (RAMSAY), 1879, T., 472.

distillation of (NAUMANN), 1878, A., 138.

- Benzene**, nitro-, action of ammonium sulphite on (ROORDA SMIT), 1876, i., 391.  
 action of aniline on (v. DECHEND and WICHELHAUS), 1876, i., 606.  
 behaviour of, with chlorine (LAUBENHEIMER), 1875, 452.  
 action of chromyl dichloride on (ETARD), 1881, A., 583.  
 action of nitric acid on (KÖRNER), 1876, i., 207.  
 oxidation of (HASSENPFUG), 1875, 1188.  
 analytically and toxicologically considered (JACQUEMIN), 1876, i., 776.  
 detection of small quantities of (GLADSTONE and TRIBE), 1878, T., 307 (foot-note).  
*d*-nitro-, action of sodium amalgam on (MICHLER), 1875, 646.  
*o*-*d*-nitro- (RINNE and ZINCKE), 1875, 255.  
*m*-*d*-nitro-, from  $\beta$ -*d*-nitraniline (SALKOWSKI and REHS), 1874, 801.  
 constitution of (WURSTER), 1874, 467; (SALKOWSKI and REHS), 1874, 795.  
 conversion of, into *m*-*d*-bromobenzene (WURSTER and GRUBENMANN), 1874, 691.  
*p*-*d*-nitro- (RINNE and ZINCKE), 1874, 1163.  
 isomeric *d*-nitro-, preparation and properties of (KÖRNER), 1876, i., 207.  
*di*- and *tri*-nitro-, oxidation of (HEPP), 1881, A., 261.  
*tri*-nitro-, from  $\beta$ -*d*-nitraniline (SALKOWSKI and REHS), 1874, 801.  
 1:3:5-*tri*-nitro- (HEPP), 1876, ii., 76.  
 isomeric *tri*-nitro-, additive compounds of (HEPP), 1879, A., 50.  
 nitramido-. See Aniline, nitr-.  
 nitroso- (v. BAEYER), 1875, 452.  
*m*-*d*-thiocyano- (GABRIEL), 1877, ii., 325.  
 disulphoxide. See Phenylie benzethiosulphonate.  
 sulphhydrate. See Phenyl mercaptan.
- Benzeneearsonic acid** (*phenylarsinic acid*) and its salts (MICHAELIS), 1876, i., 610; 1877, i., 311; (LA COSTE and MICHAELIS), 1879, A., 161; 1880, A., 396.  
 action of, on animals (SCHULZ), 1879, A., 476.
- Benzeneearsonic anhydride** (MICHAELIS), 1877, ii., 453.
- Benzeneazo**-. See under Azo-.
- Benzenecarboxylic acids**. See Benzoic, Mellitic, Phthalic, Prehnitic, Pyromellitic, Trimellitic and Trimesic acids.
- Benzenechlorosulphophosphamide** (WALLACH and HUTH), 1875, 1026; 1876, ii., 97.
- m*-**Benzenedisulphinic acid** (PAULY), 1877, i., 312.
- Benzenedisulphonamides**, *m*- and *p*- (KÖRNER and MONSELISE), 1877, i., 80.  
 bromo- (ZANDER), 1880, A., 123.
- Benzenedisulphonic acid** (LIMPRICHT), 1876, ii., 303.  
 potassium salt of, action of sodium formate on (ARMSTRONG), 1874, 804.
- m*-**Benzenedisulphonic acid** and its salts (BARTH and SENHOFFER), 1876, i., 585; (LIMPRICHT), 1876, ii., 302; (KÖRNER and MONSELISE), 1877, i., 80; (HEINZELMANN), 1877, ii., 771; (ZANDER), 1880, A., 123; (v. REICHE), 1880, A., 866.  
 action of fused alkalis on (DEGENER), 1880, A., 320.
- p*-**Benzenedisulphonic acid** (KÖRNER and MONSELISE), 1877, i., 80.  
 transformation of, into terephthalic acid (FITTIG), 1875, 366.
- Benzenedisulphonic acids** (BARTH and SENHOFFER), 1875, 1195.  
 preparation of (EGLI), 1876, i., 931.  
 constitution of (KÖRNER), 1876, i., 236.  
 terephthalic acid from (MEYER and MICHLER), 1875, 1026.
- Benzenedisulphonic acid**, bromo- (HERZIG), 1882, A., 47.  
 1:4-*di*bromo- (BORNS), 1877, ii., 769.  
*d*-nitro- (LIMPRICHT), 1875, 765.
- Benzene-*m*-disulphonic acid**, 4-bromo- (HEINZELMANN), 1878, A., 410; (ZANDER), 1880, A., 123.
- Benzene-3:5-disulphonic acid**,  $\alpha$ -nitro- (HEINZELMANN), 1878, A., 409.
- Benzenedisulphonic chloride**, *m*-chloro-nitro- (ALLERT), 1881, A., 902.
- Benzene-*m*-disulphonic chloride**, 4-bromo- (HEINZELMANN), 1878, A., 410.
- Benzenedisulphonic chlorides**, *m*- and *p*- (KÖRNER and MONSELISE), 1877, i., 81.  
 4-bromo- *o*- and *m*- (ZANDER), 1880, A., 123.
- Benzenehydrazinesulphonic acid**. See Phenylhydrazinesulphonic acid.
- Benzenephosphinic acid**. See Phosphénylous acid.

- Benzenephosphonic acid.** See Phosphenylic acid.
- Benzene-ring,** influence of amido- and nitro-groups on a sulphonating group in the (Post), 1880, A., 238; 1881, A., 91.  
influence of the amido-group on the orientation of bromine or  $\text{NO}_2$  in the (NEVILLE and WINTHER), 1880, T., 429.  
influence of substituted radicles in the, on the introduction of new groups (AUGUSTIN and Post), 1876, i., 386.
- Benzenesulphanilide.** See Benzene-sulphonanilide.
- Benzenesulphinic acid** (ADRIANOWSKY), 1879, A., 915.  
preparation of (SCHILLER and OTTO), 1877, i., 312.  
synthesis of (FRIEDEL and CRAFTS), 1878, A., 792.  
action of fuming nitric acid and of nitrous acid on (KOENIGS), 1878, A., 573; 1879, A., 314.
- Benzenesulphonamide,** action of phosphorus pentachloride on (WALLACH and HUTH), 1875, 1026; 1876, ii., 97.  
2:5-dibromo- (BAHLMANN), 1877, ii., 609.  
3:4-dibromo- (SPIEGELBERG), 1879, A., 797.  
2:4:5- and 2:4:6-tribromo- and 2:3:4:6-tetrabromo- (REINKE), 1877, ii., 462; (KNUTH), 1877, ii., 467.  
*p*-fluoro- (LENZ), 1879, A., 649.  
*o*-iodo- (PAHLMAN.), 1877, ii., 611.  
*m*-nitro- (GOSLICH), 1876, i., 930.  
*m*- and *p*-nitro- action of zinc-dust on (MAHRENHOLZ and GILBERT), 1880, A., 805.
- Benzene-2-sulphopamide,** 5-1-chloro-nitro- (LAUBENHEIMER), 1882, A., 954.
- Benzene-3-sulphonamide,** bromonitro- (BAHLMANN), 1877, ii., 609.  
2:4:6-tribromonitro- (REINKE), 1877, ii., 463; (KNUTH), 1877, ii., 468.
- Benzenesulphonanilide** (*benzenesulphanilide*), action of phosphorus pentachloride on (WALLACH and HUTH), 1876, ii., 97.  
nitration of, and trinitro- (MICHLER and BLATTNER), 1879, A., 922.
- Benzenesulphone.** See Diphenylsulphone.
- Benzenesulphonic acid** and its derivatives (LIMPRICHT), 1876, ii., 201, 301; 1877, i., 595; ii., 191; 1878, A., 220.
- Benzenesulphonic acid,** heats of formation, neutralisation and solution of (BERTHELOT), 1876, i., 872.  
action of fused alkalis on (DEGENER), 1878, A., 865.  
action of hydrogen dioxide on (LEEDS), 1882, A., 502.  
action of fuming sulphuric acid on (BARTH and SENHOFFER), 1876, i., 585.  
phenylhydrazide of (*phenylbenzenethiazide*) (FISCHER), 1878, A., 309.  
experiments for preparing the thioethers of (SCHILLER and OTTO), 1877, i., 469.  
silver salt of, action of bromine on (LIMPRICHT), 1877, ii., 459.
- Benzenesulphonic acids,** constitution of (NÖLTING), 1876, i., 81.  
conversion of, into benzenecarboxylic acids (NÖLTING), 1876, i., 394.
- Benzenesulphonic acid,** amido-. See Anilinesulphonic acid.
- o*-bromo- (LIMPRICHT), 1877, ii., 192; (BAHLMANN), 1877, ii., 608.  
*m*-bromo- (NÖLTING), 1875, 895; 1876, i., 928; (LIMPRICHT), 1877, i., 595; (THOMAS), 1877, ii., 458.  
silver salt of, action of bromine on (LIMPRICHT), 1877, ii., 459.  
*p*-bromo- (WÖLZ), 1873, 1142; (GOSLICH), 1875, 764; 1876, i., 929; (LIMPRICHT), 1875, 1195; (SPIEGELBERG), 1879, A., 796.  
*o*-, *m*-, and *p*-bromo-, constitution of (KÖRNER), 1876, i., 236.  
2:4-dibromo- (LIMPRICHT), 1878, A., 492; (SPIEGELBERG), 1879, A., 796.  
2:5-dibromo- and its derivatives (HÜBNER and WILLIAMS), 1873, 1039; (WÖLZ), 1873, 1142; (LIMPRICHT), 1876, i., 81; (BAHLMANN), 1877, ii., 610; (BORNS), 1877, ii., 768.  
3:4-dibromo- (LIMPRICHT), 1877, i., 595; 1878, A., 492; (GOSLICH), 1877, ii., 460.  
3:5-dibromo- (LIMPRICHT), 1876, i., 81; (LENZ), 1876, ii., 198; (HERZIG), 1882, A., 47.  
3:5-di- and 3:4:5-tribromo- (ZANDER), 1880, A., 124.  
tribromo- (LIMPRICHT), 1876, i., 82; ii., 301; (BORNS), 1877, ii., 769.  
2:3:5-tribromo- (LENZ), 1876, ii., 198.  
2:4:5- and 2:4:6-tribromo- (REINKE), 1877, ii., 461; (KNUTH), 1877, ii., 465.  
3:1:5-tribromo- (LIMPRICHT), 1877 i., 595.

- Benzenesulphonic acid**, 2:3:4:5-*tetra*-bromo- (LENZ), 1876, ii., 198.  
 2:3:4:6-*tetrabromo*- (BECKURTS), 1876, ii., 304; (REINKE), 1877, ii., 464; (KNUTH), 1877, ii., 467.  
*pentabromo*- and its salts (BECKURTS), 1876, ii., 305; (SPIEGELBERG; SPIEGELBERG and HEINZELMANN), 1879, A., 802.  
*o* chloro- (LIMPRICHT), 1877, ii., 193; (BAHLMANN), 1877, ii., 610.  
 derivatives of (ALLERT), 1881, A., 902.  
*m*-chloro- (LIMPRICHT), 1876, i., 82; (KIESELINSKY), 1876, i., 930.  
*p*-chloro- (NÖLTING), 1876, i., 928; (GOSLICH), 1876, i., 930.  
*o*-, *m*-, and *p*-chloro-, constitution of (KÖRNER), 1876, i., 236.  
 chloronitro- (POST and MEYER), 1881, A., 1037.  
 derivatives of (ALLERT), 1881, A., 902.  
*p*-fluoro- (LENZ), 1879, A., 649.  
*o*-iodo- (LIMPRICHT), 1877, ii., 193; (BAHLMANN), 1877, ii., 611.  
*p*-iodo- (KÖRNER and PATERNÒ), 1873, 757; (LENZ), 1877, ii., 770.  
*o*- and *p*-iodo-, constitution of (KÖRNER), 1876, i., 237.  
 nitro-, action of sodium amalgam on (CLAUS and GRAEFF), 1878, A., 73.  
*m*-nitro- (GOSLICH), 1876, i., 930.  
*o*-, *m*-, and *p*-nitro- (LIMPRICHT), 1875, 896, 1027; (KÖRNER), 1876, i., 236; (MEYER), 1876, i., 586.  
 $\alpha$ - and  $\beta$ -nitro- (POST), 1880, A., 239.  
*m*-dinitro- (LIMPRICHT), 1876, ii., 303.
- Benzene-2-sulphonic acid**, 4:6-*di*bromo- nitro- (LIMPRICHT), 1876, i., 81; 1878, A., 496; (LENZ), 1876, ii., 198.  
 4:5:6-*tri*bromonitro- (LIMPRICHT), 1876, i., 82; (LENZ), 1876, ii., 198.  
 5:1-chloronitro- and its salts (LAUBENHEIMER), 1882, A., 953.
- Benzene-3-sulphonic acid**, bromonitro- (BAHLMANN), 1877, ii., 610.  
 6:1-bromonitro- (GOSLICH), 1876, i., 929; (ANDREWS), 1881, A., 174.  
 2:5-*di*bromonitro- (HÜBNER and WILLIAMS), 1873, 1039; (BORNS), 1877, ii., 768.  
 2:4:6-*tri*bromonitro-, and its salts (REINKE), 1877, ii., 462; (KNUTH), 1877, ii., 467; (LIMPRICHT), 1878, A., 495.
- Benzene-4-sulphonic acid**, 1:2-*di*nitro- (LIMPRICHT), 1876, ii., 303; (SACHSE), 1877, ii., 751.
- Benzene-5-sulphonic acid**, 2:4:6-*tri*-bromodinitro- (LIMPRICHT), 1878, A., 496.  
 2:3:4:6-*tetrabromonitro*- (BECKURTS), 1876, ii., 305; (LIMPRICHT), 1878, A., 495.
- Benzenesulphonic chloride**, action of phosphorus *pentachloride* on (MICHAELIS), 1873, 134.  
 2:5-*di*bromo- (BAHLMANN), 1877, ii., 609.  
 3:4-*di*bromo- (SPIEGELBERG), 1879, A., 797.  
 2:4:6- and 2:4:5-*tri*bromo-, and 2:3:4:6-*tetrabromo*- (REINKE), 1877, ii., 462; (KNUTH), 1877, ii., 467.  
 2:3:4:5-*tetrabromo*- (SPIEGELBERG), 1879, A., 801.  
*p*-chloro- (NÖLTING), 1876, i., 928.  
*p*-fluoro- (LENZ), 1879, A., 649.  
*o*-iodo- (BAHLMANN), 1877, ii., 611.  
*m*-nitro- (GOSLICH), 1876, i., 9:0.
- Benzene-3-sulphonic chloride**, bromo- nitro- (BAHLMANN), 1877, ii., 609.  
 2:4:6-*tri*bromonitro- (REINKE), 1877, ii., 463; (KNUTH), 1877, ii., 467.  
 2:5:6:1-*tri*bromonitro- (SPIEGELBERG), 1879, A., 800.
- Benzene-6-sulphonic chloride**, 2:3:4:5-*tetrabromonitro*- (SPIEGELBERG), 1879, A., 802.
- Benzenethiosulphonic acid**, potassium salt of (SPRING), 1875, 129.
- Benzenetrisulphonic acid** (SENHOFFER), 1875, 366.
- Benzenyltriamidobenzene** (STÖVER), 1875, 271; (HÜBNER), 1881, A., 1131.
- Benzenylamidophenyl mercaptan** (V. HOFMANN), 1880, A., 386, 389, 885.
- Benzenylamidochrysol** (JAPP and STREATFIELD), 1882, T., 158.
- "Benzenylamidophenanthrol"** (JAPP and WILCOCK), 1880, T., 671; 1881, T., 225.
- Benzenyl- $\omega$ -diamidophenetoil** (*anthrobenzamidodithylene-o-amidophenyl ether*) (WEDDIGE), 1881, A., 1138.
- Benzenyl-o-amidophenol** (LADENBURG), 1877, i., 302; (HÜBNER), 1882, A., 505.
- Benzenyltriamidotoluene** (HÜBNER), 1881, A., 1131.
- Benzenylamidotolyl mercaptan** (HESS), 1881, A., 597.
- Benzenyldiphenylamine**, *dichloro*-. See *Diphenyldichlorobenzylamine*.
- Benzenylethylamidine** (*ethylbenzimidamide*) and its hydriodide (PINNER and KLEIN), 1878, A., 492.
- Benzenylnaphthylamidine**. See *Naphthybenzylamidine*.



- Benzenylphenylamidine.** See Phenylbenzamidine.
- Benzenyl-o-phenylenediamine** (*anhydrosulphobenzene*) (STÖVER), 1875, 271; (HÜBNER), 1876, ii., 309.  
action of amyllic iodide on (HÜBNER), 1878, A., 144.  
triiodide (HÜBNER), 1882, A., 505.
- Benzenyl-o-phenylenediamine, amido-** See Benzenyltriamidobenzene.
- Benzenylphenylenediamine-p-carboxylic acid** (*anhydrosulphobenzene-p-toluic acid*) (STODDARD), 1878, A., 503; (BRÜCKNER), 1881, A., 93.
- Benzenylphenylene-diisomyldiamine and -diethyldiamine** (HÜBNER and SIMON), 1879, A., 923.
- Benzenylphenylenemethyldiamine, methotriiodide of** (HÜBNER), 1882, A., 505.
- Benzenyltolylamidotolylamidine.** See Tolylbenzamidine, amido-.
- Benzenyltolyleneamidine.** See Tolylenedibenzenyldiamine.
- Benzenyltolylene-diamine** (LADENBURG and RÜGHEIMER), 1879, A., 715.  
amido-. See Benzenyltriamidobenzene.  
*o*-chloro- (*anhydrosulphobenzene-m-amido-p-toluic acid*) (SCHREIB), 1880, A., 557.  
*mono*- and *di*-nitro- (HÜBNER), 1881, A., 1131; 1882, A., 505.
- Benzenyltolylene-diethyldiamine** (HÜBNER), 1882, A., 505.
- Benzenyl-p-tolyltolylene-diamine** (LELLMANN), 1882, A., 1061.
- Benzenyl-m-xylylene-4:5-diamine** (*anhydrosulphobenzene-xylylene*) (HÜBNER), 1878, A., 143; 1881, A., 1132.
- Benzerythrene** (SCHULTZ), 1878, A., 323; (SCHMIDT and SCHULTZ), 1881, A., 435.
- Benzethylhydroxylamine** (WALDSTEIN), 1876, ii., 526.
- Benzethylthiocarbamide** (MIQUEL), 1877, ii., 870.
- Benzfural and its tetrabromide and benzfuralic acid** (FISCHER), 1882, A., 500.
- Benzfuroin** (FISCHER), 1882, A., 500, 798.
- o-Benzglycocylamidine** (GRIESS), 1880, A., 803.
- Benzglycocylamine** (GRIESS), 1875, 648.
- Benzhydrol** (*diphenylcarbinol*) and its derivatives (ZAGUMENNY), 1877, i., 459; (THÖRNER and ZINCKE), 1878, A., 223; (FRIEDEL and BALSOHN), 1880, A., 559.
- Benzhydrol** (*diphenylcarbinol*), condensation of, with naphthalene (LEHNE), 1880, A., 478.  
action of phosphorus pentasulphide on (ENGLER), 1879, A., 61.  
etherification of (MENSCHUTKIN), 1882, A., 818.  
nitration of (STAEDEL and PRAETORIUS), 1879, A., 319.  
ether of (THÖRNER and ZINCKE), 1878, A., 875.  
ethyl and amyl ethers of (FRIEDEL and BALSOHN), 1880, A., 558; 1881, A., 279.
- Benzhydrolene** (CARNELLEY), 1880 T., 711.
- Benzhydroxamic ether.** See Benzethylhydroxylamine.
- Benzhydroxylamine** (*benzhydroxamic acid*), crystalline form of (KLEIN), 1873, 581.  
compound of, with lead acetate (HODGES), 1877, i., 69.
- Benzhydroxypropionic acid.** See  $\gamma$ -Hydroxyphenylbutyric acid.
- Benzhydrylamine** (FRIEDEL and BALSOHN), 1881, A., 279.
- $\beta$ -Benzhydrylbenzoic anhydride** (ROTHERING and ZINCKE), 1876, ii., 413.
- Benzhydrylphenol** (DOEBNER and STACKMANN), 1878, A., 321.
- Benzhydrylpropioncarbonic anhydride.** See Oxycarboxyphenylpropionic anhydride.
- Benzidine** (*pp-diamidodiphenyl*) (SCHMIDT and SCHULTZ), 1879, A., 630, 652; 1881, A., 909; (BRUNNEMANN), 1880, A., 808; (SCHULTZ), 1881, A., 907.  
action of, on acetaldehyde, valeraldehyde, cinnamyl, furfural, benzaldehyde, and salicylaldehyde and on phthalic anhydride, urea, and allylthiocarbimide (SCHIFF; LADENBURG), 1878, A., 668.  
action of chlorine and bromine on (CLAUS and RISLER), 1881, A., 605.  
substituted derivatives of (MICHLER and PATTINSON), 1882, A., 199.
- Benzidine, dibromo-** (GABRIEL), 1877, i., 307.  
*tetrabromo-* (CLAUS and RISLER), 1881, A., 605.
- $\gamma$ -Benzidine** (*oo-diamidodiphenyl*) (STRASSER and SCHULTZ), 1882, A., 521.
- Benzidinedisulphonic acid and its salts** (GRIESS), 1881, A., 428.  
azo-derivative of ("diazohydroxybenzenesulphonic acid") (BRUNNEMANN), 1880, A., 803.

- Benzidinetetracarboxylic acid** (CLAUS and MAY), 1882, A., 515.
- Benzil** (*dibenzoyl*), constitution of (RADZISZEWSKI), 1873, 1037.
- action of *p*-hydroxybenzaldehyde on, in presence of ammonia (JAIR and ROBINSON), 1882, T., 326.
- p*-nitro-, reduction of, by tin (GOLUBEFF), 1874, 273.
- d*-nitro- (ZAGHMENNY), 1873, 502.
- isodinitro*- (GOLUBEFF), 1881, A., 422.
- Benzilic acid** (SYMONS and ZINCKE), 1874, 162.
- Benzimidoacetate** (PINNER and KLEIN), 1878, A., 492, 865.
- Benzimidoamide**. See *Benzamidine*.
- Benzimidoisomyl thioether** (PINNER and KLEIN), 1879, A., 147.
- Benzimidobenzamide** (*dibenzimido-oxide*) (PINNER and KLEIN), 1878, A., 864.
- Benzimidobenzoate**. See *Dibenzamide*.
- Benzimidobenzyl thioether** (BERNTSEN), 1879, A., 923.
- Benzimidoisobutyl ether** and its salts (PINNER and KLEIN), 1878, A., 142.
- Benzimidoethyl thioether** (BERNTSEN), 1879, A., 922.
- Benzmethylethylhydroxylamine** (LOSSEN and ZANNI), 1877, i., 188.
- o*-Benz- $\alpha$ - and - $\beta$ -methylglycocyamidines (GRIESS), 1880, A., 803.
- Benz- $\alpha$ - and - $\beta$ -methylglycocyamines (*benzcreatines*) (GRIESS), 1875, 1032.
- Benz- $\alpha$ -methylglycocyamine**, formation of (GRIESS), 1874, 906.
- Benzobenzoylaniline**. See *p*-Benzamido-benzophenone.
- Benzobenzylthiocarbamide** (MIQUEL), 1877, ii., 871.
- Benzo-*l*-bromodiphenylamide** (LELLMANN), 1882, A., 1060.
- Benzodiphenylamide** (*diphenylbenzamide*) (BERNTSEN), 1878, A., 788.
- action of phosphorus *pentachloride* on (CLAUS), 1882, A., 178; (WALLACH), 1882, A., 394; (CLAUS and SCHAARE), 1882, A., 1060.
- Benzo-*as*-diphenylhydrazide** (FISCHER), 1878, A., 313.
- Benzodiphenylthiamide**. See *Diphenylthiobenzamide*.
- Benzo-*as*-di-*p*-tolylhydrazide** (LEHNE), 1881, A., 41.
- iso***Benzoglycol** (RENARD), 1880, A., 802.
- Benzoic acetic anhydride** (*acetylbenzoic anhydride*) (LOIR), 1880, A., 31.
- action of chlorine and hydrochloric acid on (GREENE), 1880, A., 550.
- Benzoic acid** (HODGKINSON), 1878, T., 499, 502.
- formation of, in the animal organism during fever (WEYL and v. ANREP), 1880, A., 716.
- preparation of (ANON.), 1881, A., 423.
- preparation of, from a mixture of  $\psi$ -aconitine and *apo*- $\psi$ -aconitine (WRIGHT and LUFF), 1878, T., 162.
- preparation of, from benzotrichloride and water (LUNGE), 1881, A., 323.
- preparation of crystallised, from gum benzoin (GUICHARD), 1873, 902.
- production of, from toluene (JOB), 1882, A., 1146.
- synthesis of (FRIEDEL, CRAFTS and ADOR), 1878, A., 69, 317; (FRIEDEL and CRAFTS), 1878, A., 792.
- solubility of (OST), 1878, A., 796; (BOURGOIN), 1878, A., 879; 1880, A., 471.
- action of *o*-amidophenol on (LADENBURG), 1877, i., 202.
- action of ethylic nitrate on, in presence of concentrated sulphuric acid (FITTICA), 1876, ii., 411.
- action of, on morphine (BECKETT and WRIGHT), 1873, 24.
- action of, on phenylthiocarbimide (LOSANITSCH), 1873, 758.
- action of, on potassium permanganate (SCHACHT), 1882, A., 339; (SCHNEIDER; SCHAR), 1882, A., 1133; (LEFKEN), 1882, A., 1328.
- action of sodium formate on (v. RICHTER), 1873, 1238; (MEYER), 1874, 478.
- action of sulphuric acid on a mixture of gallic acid and (SEUBERLICH), 1877, ii., 894.
- action of thiocyanates on (KEKULÉ), 1873, 636.
- conversion of, into aniline (ROTHERMUND), 1875, 768.
- conversion of, into *m*-chlor-*o*-hydroxybenzoic acid (HÜBNER and WEISS), 1873, 756.
- behaviour of, in the organism of birds (JAFFE), 1878, A., 584.
- antiseptic action of, on beer worts and urine (v. MEYER and KOLBE), 1876, i., 959.
- derivatives of (GRIESS), 1879, A., 246.
- heat of formation of (LUGNIN), 1878, A., 768; 1879, A., 873.
- Benzoic acid**, barium salt of, product of the distillation of (BEHR), 1873, 276.
- distillation of, with barium thio-cyanate (PFANKUCH), 1873, 363.

- Benzoic acid**, barium salt of, action of sulphur on (RADZISZEWSKI and SOKOLOWSKI), 1874, 476.  
 silver salt of, action of iodine on (BIRNBAUM and REINHERZ), 1882, A., 970.  
 double salts of nitrobenzoic acids and (SALKOWSKI), 1878, A.; 72.
- Benzoic acid**, amido-, heat of substitution of (LUGININ), 1879, A., 768.  
*o*-amido-. See Anthranilic acid.  
*m*-amido- (HÜBNER), 1878, A., 148; 1879, A., 381.  
 action of, on helicin (SCHIFF), 1880, A., 126.  
 action of iodine and mercuric oxide on (BENEDIKT), 1875, 894.  
 dicyanide (GRIESS), 1879, A., 466.  
 compound of heptioic aldehyde with the sulphite of (SCHIFF), 1882, A., 304.  
*p*-amido- (WIDMANN), 1879, A., 155.  
 preparation of (MICHAEL), 1877, ii., 615.  
*diamido*-, action of methylic iodide on (GRIESS), 1874, 477.  
*2:5-diamido*- (GRIESS), 1879, A., 247.  
*3:4-diamido*- (GRIESS), 1873, 178.  
 formation of (SALKOWSKI), 1882, 72.  
 isomeric amido- (WIDMANN), 1878, A., 154.  
 action of ethylic cyanate on (GRIESS), 1873, 72.  
 hydrofluorides of (PATERNO and OLIVERI), 1882, A., 613.  
 bromo- (HUNNIUS), 1878, A., 147.  
*o*-bromo-, and its salts (RHALLIS), 1880, A., 118.  
*m*-bromo- (WROBLEWSKI), 1878, A., 977.  
*v*-bromo-, formation of, from brom-aniline melting at 63°-64° (WEITH and LANDOLT), 1875, 1194, 1200.  
*di*bromo- (HÜBNER), 1878, A., 148.  
 formation of, from *di*bromonitrobenzene (v. RICHTER), 1875, 73.  
*3:4-di*bromo- (BURGHARD), 1875, 892.  
 from *op*-dinitrobenzoic acid (HALBERSTADT), 1882, A., 183.  
*om-di*bromo-, and its salts (CLAUS and LADE), 1881, A., 814.  
 $\alpha$ - and  $\beta$ -*om-di*bromo- (HÜBNER), 1878, A., 148.  
 isomeric *tri*bromo-, and 4:3-brom-amido- (HÜBNER), 1878, A., 148.  
*3:4:2* or *6-di*bromamido- (GREIFF), 1880, A., 648.  
*2:5-bromonitro*- (RHALLIS), 1880, A., 119.
- Benzoic acid**, 4:3-bromonitro- (HÜBNER), 1878, A., 149; (BEDSON), 1880, T., 97.  
 $\alpha$ - and  $\beta$ -*m*-bromo-*o*-nitro- (HÜBNER), 1878, A., 148.  
 isomeric bromonitro-, action of potassium cyanide on (VAN RENESSE), 1877, i., 311.  
*v*-chloro- (JACKSON and WHITE), 1878, A., 729.  
 action of sodium amalgam on (HARTMANN), 1876, i., 256.  
 compounds of (EMMERLING), 1875, 1261.  
 isomeric chloro-, conversion of the isomeric chloranilines into the corresponding (BEILSTEIN and KURBATOFF), 1874, 806.  
 isomeric *dichloro*- (CLAUS), 1873, 1141; 1876, i., 252; (BEILSTEIN), 1875, 1194; 1876, i., 586; (SCHULTZ), 1877, ii., 781.  
*5:3-chloramido*- and *3-5-chloronitro*- (HÜBNER), 1878, A., 148.  
 $o$ -,  $m$ -, and  $p$ -fluoro-, and their salts (PATERNO), 1881, A., 597; (PATERNO and OLIVERI), 1882, A., 613.  
*p*-iodo- (GLASSNER), 1875, 888.  
*m*-iod-2-amido-, and its salts (GROTHE), 1879, A., 377.  
4:3-iodonitro- (GLASSNER), 1875, 888.  
 isomeric iodonitro-, and their salts (GROTHE), 1879, A., 377.  
 nitro-, etherification of (MENSCHUTKIN), 1882, A., 818.  
 $o$ -nitro-, preparation of (GRIESS), 1878, A., 150.  
 action of bromine on (CLAUS and LADE), 1881, A., 814.  
 action of nitric and sulphuric acids on (GRIESS), 1875, 263.  
*m*-nitro- (GRIESS), 1873, 637; (HÜBNER), 1878, A., 144, 148; (HUNNIUS), 1878, A., 147.  
 and its barium salt (HÜBNER), 1879, A., 381.  
 reduction of (HÜBNER), 1878, A., 150.  
*p*-nitro- (SPICA), 1879, A., 631; (COLUBEFF), 1881, A., 422.  
 action of bromine on (CLAUS and HALBERSTADT), 1880, A., 647; (HALBERSTADT), 1881, A., 729.  
 nitration of (HÜBNER and STROMEYER), 1880, A., 549.  
 double salt of benzoic acid and (SALKOWSKI), 1876, i., 710.  
 isomeric nitro- (FITTICA), 1875, 766, 1195; 1876, ii., 412; 1877, ii., 483; 1878, A., 980; 1879, A., 150; (GRIESS), 1875, 892; (WIDN-

- MANN), 1875, 893; 1877, ii., 783; 1879, A., 154; (LADENBURG), 1875, 1263; (LIEBERMANN), 1877, ii., 782; (BODEWIG), 1880, A., 251; (CLAUS), 1880, A., 647.
- Benzoic acid**, isomeric nitro-, melting points of (LIEBERMANN), 1877, ii., 782.
- reduction products of (GRIESS), 1875, 460.
- 3:4-*d*-nitro-, and its salts (CLAUS and HALBERSTADT), 1880, A., 647.
- 3:5-*d*-nitro- (HÜBNER), 1878, A., 148; (BEILSTEIN and KURBATOFF), 1880, A., 47.
- preparation of (HÜBNER and STROMMEYER), 1880, A., 549.
- action of sodium amalgam on (MEYER and MICHLER), 1873, 1141; (MICHLER), 1875, 644.
- 3:2-( $\beta$ )-nitramido- and its salts (HÜBNER), 1878, A., 150; 1879, A., 382.
- 3:4-nitramido- (GRIESS), 1873, 178.
- formation of, from nitranisic acid and ammonia (SALKOWSKI), 1875, 72.
- 5:2-( $\alpha$ )-nitramido- (HÜBNER), 1878, A., 150; 1879, A., 381; (GRIESS), 1879, A., 246; (RHALLIS), 1880, A., 119.
- diazo-compound of, and 5:3-nitramido- (HÜBNER), 1878, A., 148.
- 3:5:4-*d*-nitramido- (*chrysanisic acid*) (STAEDEL), 1881, A., 724.
- preparation of (FRIEDERICI), 1879, A., 324.
- sulpho-. See Sulphobenzoic acid.
- $\beta$ -thio- Fleischer's (KLINGER), 1882, A., 1058.
- Benzoic anhydride**, formation of (GAL and EFARD), 1876, i., 899.
- boiling point of (ANSCHÜTZ), 1878, A., 136.
- action of, on codeine and on morphine (BECKETT and WRIGHT), 1875, 21.
- Benzoic bromide**, and its compound with benzaldehyde (CLAISEN), 1882, A., 514.
- Benzoic chloride** (LIEBEN), 1876, i., 80.
- action of, on some amides (KRETZSCHMAR and SALOMON), 1874, 790; (KRETZSCHMAR), 1875, 563; 1877, i., 614.
- action of, on cyanamide and sodium cyanide (GERLICH), 1876, ii., 196.
- action of, on dimethylaniline (MICHLER and DUPERTIUS), 1877, ii., 384; (E. and O. FISCHER), 1879, A., 787.
- Benzoic chloride**, action of, on *d*-nitrophenol (GOLDSTEIN), 1876, ii., 298.
- action of, on potassium thiocyanate (LÖSSNER), 1874, 366; 1875, 640.
- action of, on urethane and oxamethane (KRETZSCHMAR), 1875, 563.
- combination of titanium tetrachloride and (BERTRAND), 1881, A., 273.
- Benzoic chloride**, *p*-bromo- (HÜBNER), 1878, A., 149.
- m*-nitro- (CLAISEN and THOMPSON), 1880, A., 253.
- Benzoic cyanide** and its derivatives, nitration of (THOMPSON), 1881, A., 814.
- and the action of phosphorus *penta*-chloride on (CLAISEN), 1879, A., 647.
- action of zinc ethyl on (FRANKLAND and LOUIS), 1880, T., 742.
- Benzoic cyanide**, *o*-nitro-, test for (CLAISEN), 1880, A., 68.
- m*-nitro- (CLAISEN and THOMPSON), 1880, A., 253.
- Benzoic nitrite** (LIPPMANN and HAWLICZEK), 1877, i., 315.
- Benzoic series**, constitution of the compounds of (MEYER), 1874, 479.
- Benzoic thiocyanate** (MIQUEL), 1876, i., 570.
- Benzoïn** (*hydroxyphenyl benzyl ketone*), constitution of (RADZISZEWSKI), 1873, 1037.
- decomposition of, by heat (ZININ), 1874, 262.
- action of nascent hydrogen on (GOLDENBERG), 1875, 365.
- reduction of (ZAGUMENNY), 1875, 1191.
- derivatives of (GOLDENBERG), 1874, 694.
- Benzoïn, gum-**. See under Resin.
- Benzoline**. See Ligroin.
- Benzolone**. See Triphenylglyoxaline.
- Benzomeside**, *mono*- and *tri*-nitro- (HÜBNER), 1878, A., 144.
- Benzo- $\alpha$ -naphthalide**, 2- and 4-nitro- (EBELL), 1875, 272, 900.
- 2-*mono*- and 2:4-*di*-nitro- (HÜBNER), 1881, A., 1132.
- thio- (BERNTHSEN and TROMPETER), 1879, A., 147.
- Benzo- $\beta$ -naphthalide** (COSINER), 1881, A., 606.
- "**Benzonaphthone**" (JAPP and MILLER), 1881, T., 221.
- Benzonaphthylene-*p*-diamine** (HÜBNER), 1881, A., 1132.
- Benzonaphthylthiocarbamide** and its nitro-derivative (MIQUEL), 1877, ii., 871.



**Benzonitrile** (*phenylic cyanide*), action of nascent hydrogen on (SPICA), 1881, A., 261.  
 action of zinc ethyl on (FRANKLAND and EVANS), 1880, T., 563.  
 bromination and chlorination of (TIEMANN and REIMER), 1879, A., 721.  
 conversion of, into phenylthiocarbamide (WEITH), 1873, 908.  
**Benzonitrile**, *m*-amido- (HÜBNER and FRICKE), 1875, 272.  
*o*-amido- and *o*-nitro- (HÜBNER), 1878, A., 140.  
**Benzo-*o*- and -*p*-nitrophenylamide and benzonitro-*p*-ditolylamide** (LELLMANN), 1882, A., 1059.  
**Benzo-*mono*- and -*di*-nitromesidide**, *m*-nitro- (HÜBNER), 1878, A., 144.  
**Benzo-2-nitro-*p*-toluidide** (BELL), 1875, 370.  
**Benzo-*m*-nitro-*p*-toluidide**, *o*-chloro- (SCHREIB), 1880, A., 557.  
**Benzo-3-*mono*- and -3:5-*di*-nitro-*p*-toluidide** (KELBE), 1876, i., 270; (HÜBNER), 1881, A., 1131.  
**Benzonitrotoluidide**. See also Benzo-toluidide, nitro-.  
**4-Benzo-5-nitrotolylenediamine** (HÜBNER), 1881, A., 1132.  
**Benzonitro-*m*-xylylide**,  $\alpha$ - and  $\beta$ - (HÜBNER), 1878, A., 143.  
**Benzophenone** (*diphenyl ketone*) (THÖRNER and ZINCKE), 1878, A., 223; (STAEDEL), 1879, A., 318; (RICHTER), 1882, A., 618.  
 preparation of, from phenylic benzoate (GOLDSTEIN), 1881, A., 423.  
 synthesis of (FRIEDEL, CRAFTS and ADOR), 1878, A., 69, 317.  
 nitration of (STAEDEL and PRAETORIUS), 1878, A., 420; 1879, A., 319.  
 reduction of (STAEDEL), 1874, 264; 1875, 1191; (BARBIER), 1875, 254.  
 chloride (KEKULÉ and FRANCHIMONT), 1873, 171.  
 action of amines on (PAULY), 1877, ii., 614.  
 derivatives (URECH), 1874, 156; (BECKMANN), 1876, i., 583; (STAEDEL and PRAETORIUS), 1878, A., 671.  
 sulphuretted derivatives of (ENGLER), 1879, A., 61.  
 homologues of (SÖLLSCHER), 1882, A., 1292.  
**Benzophenone**, *p*-amido- (*benzoylaniline*) (DOEBNER), 1880, A., 804; 1882, A., 508; (DOEBNER and WEISS), 1882, A., 176.

**Benzophenone**,  $\beta$ -*di*amido- (*flavin*) (DOER), 1873, 170; (STAEDEL and PRAETORIUS), 1878, A., 671; 1879, A., 319; (STAEDEL and SAUER), 1879, A., 242.  
*m*-bromo- and *p*-chloro- (KOLLARITS and MERZ), 1873, 1036.  
 isomeric *d*initro- (DOER), 1873, 170; (STAEDEL and PRAETORIUS), 1878, A., 420; 1879, A., 319; (STAEDEL and SAUER), 1879, A., 242.  
 thio- (BEHR), 1878, 276; (ENGLER), 1879, A., 61.  
**Benzophenonecarboxylic acid**. See Benzoylbenzoic acid.  
**Benzophenonedio-*p*-carboxylic acid** (WEILER), 1875, 151; (ADOR and CRAFTS), 1878, A., 405.  
**Benzophenonedisulphonic acid** (STAEDEL), 1879, A., 318.  
**Benzophenonedisulphonic di- and tetrachloride** (BECKMANN), 1876, i., 583.  
**Benzo-*m*-phenylenediamine** (ENGLER and VOLKHAUSEN), 1875, 643; (HÜBNER), 1876, ii., 309.  
**Benzo-*p*-phenylenediamine** (HÜBNER), 1881, A., 1130.  
*s*-Benzophenylhydrazide (FISCHER), 1878, A., 308.  
**Benzophenyl- $\alpha$ -naphthalide** (STREIFF), 1881, A., 176.  
**Benzophenylisonitrile**. See Benzoylphenylcarbamine.  
**Benzophenylthiocarbamide**, and its nitro-derivative (MIQUEL), 1877, ii., 870.  
**Benzophenylthiocarbazine** (FISCHER and BESTHORN), 1882, A., 1095.  
**Benzophosphinic acid**. See Carboxybenzenephosphonic acid.  
**Benzophthalanilide** (DOEBNER), 1880, A., 804.  
**Benzopinacolin**. See Benzpinacolin.  
**Benzoquinol**. See Quinol.  
**Benzoquinone**. See Quinone.  
**Benzostilbene**. See Triphenylglyoxaline.  
**Benzothiocarbamide** (PIKE), 1873, 1132; (MIQUEL), 1877, ii., 869.  
**Benzothiocarbimide** (MIQUEL), 1877, ii., 869.  
**Benzo-*o*-toluidide**, oxidation of (BRÜCKNER), 1881, A., 94.  
**Benzo-*p*-toluidide**, amido-. See Benzotolylene-3:4-diamine.  
*di*amido-. See Benzenyltriamido-toluene.  
*o*-chloro-, and its derivatives, and *o*-chloro-*di*- and -*tri*-nitro- (SCHREIB), 1880, A., 557.  
*m*-nitro-, and its anhydro-compound (HÜBNER), 1878, A., 144.

- Benzo-*p*-toluidide**, *m*-nitro-. See also Benzonitrotoluidide.  
thio- (LEO), 1878, A., 409.
- Benzotolylene-2:4-diamine**, thio- (BERNTSEN and THOMPETER), 1879, A., 147.
- Benzotolylene-3:4-diamine**, and the action of benzoic chloride on (HÜBNER), 1881, A., 1131.
- o*-chloro- (*o*-chlorobenzamido-*p*-toluidide), action of benzoic chloride on (SCHREIB), 1880, A., 557.
- nitro- (HÜBNER), 1881, A., 1131.
- Benzo-*p*-tolylthiocarbamide** (MIQUEL), 1877, ii., 871.
- Benzotrichloride**, action of copper on (HANNHART), 1882, A., 1103.  
action of, on phenol (DOEBNER and STACKMANN), 1877, ii., 327; 1878, A., 321.  
compounds of, with phenols and tertiary aromatic bases (DOEBNER), 1878, A., 873; 1880, A., 239, 644; 1881, A., 165; 1882, A., 956.
- Benzoxiazobenzene**. See Benzeneazophenylie benzoate under Azo.
- Benzo-*m*-xylene-4-sulphonamide** (MAISON), 1882, A., 1208.
- Benzo-*m*-xylidide**,  $\alpha$ - and  $\beta$ - (HÜBNER), 1878, A., 143.  
 $\alpha$ - and  $\beta$ -nitro- (HÜBNER), 1881, A., 1132.
- Benzoyl**, amidodicyano- (GRIESS), 1879, A., 321, 466.
- Benzoylacetie acid**, *m*-amido- and *m*-nitro- (LIEBERMANN), 1877, ii., 617.
- Benzoylacetate-*o*-carbonic acid**. See Acetophenone-*oo*-dicarboxylic acid.
- Benzoylacetymorphine** (BECKETT and WRIGHT), 1875, 323.
- Benzoyl $\rho$ aconitine** (WRIGHT and LUFF), 1878, T., 327.
- Benzoyl $\rho$ - $\psi$ -aconitine** (WRIGHT and LUFF), 1878, T., 171.
- Benzoylacrylic acid** (v. PECHMANN), 1882, A., 1074.
- Benzoylaniline**. See Benzophenone, *p*-amido-.
- Benzoylazotide** (*hydrocyanobenzide*) (PLOCHE), 1881, A., 820.
- o*-**Benzoylbenzoic acid** (*benzophenone-*o*-carboxylic acid*) (PLASCUDA), 1875, 75; (ROTHERG and ZINCKE), 1876, ii., 413; (FRIEDEL and CRAFTS), 1881, A., 731.  
synthesis of (FRIEDEL and CRAFTS), 1878, A., 792.  
conversion of, into anthraquinone (BEHR and VAN DORP), 1874, 803.  
compounds of, with phenols (v. PECHMANN), 1881, A., 96; 1882, A., 184.
- m*-**Benzoylbenzoic acid** (DOEBNER), 1881, A., 600; 1882, A., 508.
- p*-**Benzoylbenzoic acid** (PLASCUDA), 1875, 75; (THÖRNER), 1878, A., 68.
- p*-**Benzoylbenzylic chlorides**. See *p*-Phenyl chlorotolyl ketones.
- Benzoylisobutylphenol** (STUDER), 1882, A., 176.
- Benzoylcarbinol** (*hydroxyacetophenone*) and its acetic and benzoic ethers (HUNAEFS and ZINCKE), 1878, A., 221.  
oxidation of (BREUER and ZINCKE), 1880, A., 645.
- Benzoyleevadine** (WRIGHT and LUFF), 1878, T., 351.
- Benzoylcodeine** (BECKETT and WRIGHT), 1875, 322.
- Benzoylconylethylalkeine**. See Benzoylhydroxyethyl-2-propylpiperidine.
- Benzoylcrotonic acid** (v. PECHMANN), 1882, A., 1074.
- Benzoyl-*m*-isocymenol** (KELBE), 1882, A., 300.
- "**Benzoyldiazobenzene**" (FISCHER), 1878, A., 308.
- Benzoyldibenzylthymol** (MAZZARA), 1882, A., 173.
- Benzoyldimethylaniline**. See Dimethylamidobenzophenone.
- Benzoyldimethyl-*o*-toluidine** (FISCHER), 1881, A., 587.
- Benzoyldiphenyl** (WOLF), 1882, A., 62.
- Benzoylformic acid**. See Phenylglyoxylic acid.
- Benzoylhydrocærulignone** (LIEBERMANN), 1873, 1033.
- Benzoylhydroxyethyl-2-propylpiperidine** (*benzoylconylethylalkeine*) (LADENBURG), 1882, A., 1193.
- Benzoylmethylecgonine**. See Cocaine under Alkaloids.
- Benzoyl-4:2-nitramidophenol** (STUCKENBERG), 1877, ii., 474.
- Benzoylnitrobenzoic acids** (FITTICA), 1877, ii., 483; 1879, A., 153.
- Benzoylornithine** (JAFFÉ), 1878, A., 585.
- Benzoyloxymyristic acid** and its salts (MÜLLER), 1882, A., 497.
- Benzoylphenol**. See Hydroxybenzophenone.
- Benzoylphenol ether**. See Phenylie benzoate.
- Benzoylphenylcarbamine** (*benzophenylisonitrile*) (DOEBNER and WEISS), 1882, A., 176; (DOEBNER), 1882, A., 508.
- Benzoylphenylurethane**. See Ethylic *p*-benzoylphenylcarbamate.
- Benzoylsophthalic acid**, formation of (BLATZBECKER), 1877, i., 469.  
reduction of (ZINCKE), 1875, 1024.

- Benzoylpieramic acid** (STUCKENBERG), 1877, ii., 474.
- Benzoylpicrotoxin** (PATERNO and OGLIALORO-TODARO), 1879, A., 729.
- Benzoylpropaldehyde** (BURCKER), 1882, A., 730.
- $\beta$ -Benzoylpropionic acid** (*phenyloxyprotonic acid*) (MATSMOTO), 1876, i., 80; (V. PECHMANN), 1882, A., 1074. synthesis of (BURCKER), 1881, A., 273.
- Benzoylpyrocatechol** (DOEBNER), 1882, A., 508.
- Benzoylresorcinol** and its dibenzoate (DOEBNER and STACKMANN), 1879, A., 319; (DOEBNER), 1882, A., 508.
- Benzoylsalicin.** See Populin.
- Benzoyltropeine**, and its salts (LADENBURG), 1880, A., 714.
- Benzoyltropine** (BUCHHEIM), 1877, ii., 197.
- Benzoylvanillin** (TIEMANN and HAARMANN), 1874, 896.
- $\beta$ -Benzpinacolin** (ZAGUMENNY), 1881, A., 434, 813.
- Benzpinacolin**,  $\alpha$ - and  $\beta$ - (THÖRNER), 1876, ii., 193; 1877, i., 464; 1878, A., 67; (THÖRNER and ZINCKE), 1878, A., 223, 425, 874.
- Benzpinacone** (*tetraphenylethylene glycol*) (THÖRNER and ZINCKE), 1878, A., 223; (ZAGUMENNY), 1881, A., 813.
- Benzyl ethyl oxide**, *p*-chloro- (JACKSON and WHITE), 1881, A., 808.
- Benzyl haloid ethers**, action of nitriles on (BRUNNER), 1877, i., 466.
- Benzyl mercaptan**, action of sulphuric acid on (OTTO), 1880, A., 810. *p*-chloro-, mercury salt of (JACKSON and WHITE), 1881, A., 807.
- Benzyl methyl ketone** (GABRIEL and MICHAEL), 1879, A., 795.
- Benzyl naphthyl ketone**, preparation of (GRAEBE and BUNGENER), 1879, A., 807.
- Benzyl  $\beta$ -naphthyl oxide** (STAEDEL), 1881, A., 724.
- Benzyl tolyl oxide.** See Tollyl benzyl oxide.
- Benzylacetic acid.** See  $\beta$ -Phenylpropionic acid.
- Benzylamarine benzyl chloride** (MELDOLA), 1880, A., 882.
- Benzylamine** and its salts (RUDOLPH), 1879, A., 921; (SPICA), 1881, A., 262. *p*-bromo- (JACKSON and LOWERY), 1882, A., 170. *p*-chloro-, and its salts (JACKSON and FIELD), 1881, A., 804.
- Benzylamine**, *p*-mono-, -di-, and -tri-iodo- (MABERY and JACKSON), 1878, A., 422.
- Benzylammonium benzylcarbamate** (TIEMANN and FRIEDLÄNDER), 1882, A., 56.
- Benzylaniline** (BERNTHSEN and TROMPETER), 1879, A., 147. *p*-nitro- (STRAKOSCH), 1874, 80.
- o*-Benzylbenzoic acid** (ROTHERING and ZINCKE), 1876, ii., 413.
- Benzylcarbamide** (PATERNO and SPICA), 1876, i., 601.
- Benzylcarbinol** (*n*-phenylethyl alcohol) (RADZISZEWSKI), 1876, ii., 78.
- Benzylchloromalonamide** (BISCHOFF and EMMERT), 1882, A., 1208.
- Benzyleinchonine** and its hydrochloride (CLAUS and TREUPEL), 1881, A., 290.
- Benzyl-compounds**,  $\alpha$ -bromo- (JACKSON and WHITE), 1880, A., 879. *p*-bromo- (JACKSON and LOWERY), 1878, A., 64; 1882, A., 170. *p*-chloro- (JACKSON and WHITE), 1880, A., 878; 1881, A., 806; (JACKSON and FIELD), 1881, A., 803.
- Benzylcreatinines.** See Benz- $\alpha$ - and - $\beta$ -methylglycoeyamides.
- Benzyl-cresol** and -*eresotic acid* (PATERNO and MAZZARA), 1879, A., 314.
- Benzylcurcumin**, *p*-bromo- (JACKSON and MENKE), 1882, A., 1108.
- Benzyl-diethylamine**, ethiodide of (MEYER), 1877, ii., 190, 606.
- Benzyl-diethyl- and -dimethyl-sulphine iodides** and platinochlorides (SCHÖLLER), 1875, 258.
- Benzyl-dimethylselenium triiodide** (JACKSON), 1876, i., 581.
- Benzyl-diphenyl**, *o*- and *p*- (GOLDSCHMIEDT), 1882, A., 202.
- Benzylene.** See Benzylidene.
- Benzyleugenol** (CAHOURS), 1877, i., 462.
- Benzylfluorene** (GOLDSCHMIEDT), 1882, A., 202.
- Benzylhydroxymalonic acid.** See Benzyltartronic acid.
- Benzylie acetate**, action of benzylic chloride on (PERKIN and HODGKINSON), 1880, T., 721. alcohol, occurrence of, in liquid storax (LAUBENHEIMER), 1873, 65. transformation of benzamide into (GUARESCHI), 1875, 569. preparation of (MEYER), 1882, A., 170. action of aluminium iodide on, in presence of aluminium (GLADSTONE and TRIBE), 1881, T., 10. action of sulphuryl chloride on (BEHREND), 1877, i., 182; ii., 289.

- Benzyl alcohol**, *p*-bromo- (JACKSON and LOWERY), 1878, A., 64; 1882, A., 170.  
*p*-chloro- (JACKSON and FIELD), 1881, A., 803.  
*p*-iodo- (MABERY and JACKSON), 1878, A., 421.  
*o*-nitro- (FRIEDLÄNDER and HENRIQUES), 1882, A., 840.  
*di*nitro- (ORTH), 1882, A., 1198.  
benzyl dimethylacetate, and the action of sodium on, and saponification of (HODGKINSON), 1878, T., 498.  
benzyl methylacetacetate (*methylhydrocinnumicin*) (CONRAD), 1878, A., 732.  
bromide, action of, on methyl sulphide (CAHOURS), 1875, 1181.  
*o*- and *p*-bromo- (JACKSON and LOWERY), 1876, i., 704.  
*o*-bromo-, synthesis of anthracene and phenanthrene from (JACKSON and WHITE), 1880, A., 262; 1881, A., 822.  
isomeric bromo-, relative displacement of bromine in (JACKSON), 1876, ii., 512; 1880, A., 161.  
bromo-. See also *Toluene*, *di*bromo-*p*-chloro- (JACKSON and FIELD), 1879, A., 62; 1881, A., 803; (JACKSON and WHITE), 1880, A., 879.  
*o*-iodo-, and its derivatives (MABERY and ROBINSON), 1882, A., 1057.  
*p*-iodo- (MABERY and JACKSON), 1878, A., 421.  
*isobutyrate*, preparation of, and action of sodium on (HODGKINSON), 1878, T., 496.  
chloride, action of aluminium chloride on (PERKIN and HODGKINSON), 1880, T., 726.  
action of aluminium chloride on a mixture of phenyl acetate and (PERKIN and HODGKINSON), 1880, T., 724.  
action of chromyl dichloride on (ETARD), 1881, A., 581.  
action of, on aromatic hydrocarbons (ZINCKE), 1873, 272.  
action of methylal on (WEILER), 1875, 151.  
action of, on naphthylamine (FROTE and TOMMASI), 1873, 1147.  
action of sodium amalgam on (ARONHEIM), 1876, i., 580.  
action of water on (NIEDERIST), 1879, A., 700.  
formation of anthracene from (ZINCKE), 1874, 690.
- Benzyl chloride**, *p*-chloro- (JACKSON and FIELD), 1879, A., 62; 1881, A., 803.  
*o*-nitro- (WACHENDORFF), 1876, i., 80.  
cyanide. See *Phenylacetone*.  
iodide, action of silver nitrite on (VAN RENESSE), 1877, i., 310.  
nitrate, *p*-nitro- (ORTH), 1882, A., 1198.  
*mono*- and *di*-selenide (JACKSON), 1875, 553; 1876, i., 580.  
selenocyanate and nitro- (JACKSON), 1875, 1024; 1876, i., 581.  
hydrogen sulphide and thiobenzate (OTTO and LÜDERS), 1880, A., 811.  
thiocyanate, *p*-chloro- (JACKSON and FIELD), 1881, A., 804.  
*p*-iodo- (MABERY and JACKSON), 1878, A., 422.  
*o*-thioformate, crystalline form of (DENNSTEDT), 1879, A., 318; 1880, A., 646.
- Benzylidene furfurylidene ketone**. See *Furfurylvinyl styryl ketone*.  
**Benzylideneacetone**. See *Styryl methyl ketone*.  
**Benzylideneacetophenone** and its *di*-bromide (CLAISEN and CLAPARÈDE), 1882, A., 512.  
**Benzylidenedibromo-*p*-toluidine** (*tetra-bromodibenzylene-*p*-dimethylphenylamine*) (MAZZARA), 1880, A., 879.  
**Benzylidenechloralammonia** (SCHIFF), 1879, A., 452.  
**Benzylidene dichlorodi-chromous and -chromic acids** (ETARD), 1881, A., 581.  
**Benzylidenediacetonamine**, and its salts (HEINTZ), 1879, A., 54.  
**Benzylidenediphenylhydrazine**. See *Benzaldehydediphenylhydrazone*.  
**Benzylidenemesityl oxide** (*benzylidenisopropylideneacetone*) (CLAISEN and CLAPARÈDE), 1881, A., 423.  
**Benzylidenephénylhydrazine**. See *Benzaldehydediphenylhydrazone*.  
**Benzylidenephthalide**, and its derivatives (GABRIEL and MICHAEL), 1878, A., 735; 1879, A., 246.  
**Benzylidenisopropylideneacetone**. See *Benzylidenemesityl oxide*.  
**Benzylidene chloride**, action of chlorine and nitric acid on (HÜENER and BENTE), 1874, 152.  
*m*-nitro- (WIDMAN), 1880, A., 635; 1882, A., 47.  
selenide (COLE), 1876, i., 397.  
sulphide. See *Benzaldehyde*, *thio*-.



- Benzylmalonic acid** (CONRAD), 1879, A., 707.  
nitroso-, and some of its salts (CONRAD and BISCHOFF), 1882, A., 39.
- Benzylmethyacetic acid.** See Phenylisobutyric acid.
- Benzylmethylglycollic acid.** See  $\alpha$ -Hydroxy- $\beta$ -phenylisobutyric acid.
- Benzylmethylmalonic acid** (CONRAD and BISCHOFF), 1880, A., 628.
- Benzylmethylphenoxyacetic acid.** See Benzoyltolylglycollic acid.
- Benzylmethylpiperidine and its iodide** (SCHOTTEN), 1882, A., 982.
- $\alpha$ -Benzyl-naphthalene** (FROTÉ), 1873, 891; (MIQUEL), 1876, ii., 407.
- Benzylphenanthrene** (GOLDSCHMIEDT), 1882, A., 202.
- p*-Benzylphenol and its derivatives** (PATERNO and FILETI), 1874, 371; 1876, i., 581; (PERKIN and HODGKINSON), 1880, T., 724; (RENNIE), 1882, T., 32, 220; (LIEBMANN), 1882, A., 171, 727.  
amido-, bromonitro-, and *mono*- and *di*-nitro- (RENNIE), 1882, T., 221.  
*trinitro*- (RENNIE), 1882, T., 36.  
oxidation of (RENNIE), 1882, T., 223.
- p*-Benzylphenolsulphonic acid, and bromo- and nitro-, and their salts** (RENNIE), 1882, T., 34, 220.
- p*-Benzylphenoxyacetic acid** (MAZZARA), 1882, A., 403.
- p*-Benzyl- $\alpha$ -phenoxypropionic acid and its salts** (MAZZARA), 1882, A., 1072.
- Benzylphenyl-**. See Phenylbenzyl-.
- Benzylisophthalic acid and its salts** (BLATZBECKER), 1877, i., 469.
- $\alpha$ -Benzylphthalide** (GABRIEL and MICHAEL), 1878, A., 736.
- Benzylpiperidine** (SCHOTTEN), 1882, A., 982.
- Benzylpyrrolidine and its derivatives** (LICHTENSTEIN), 1881, A., 721.
- Benzylselenious acid** (JACKSON), 1875, 154; 1876, i., 581.
- Benzylselenocarbamide** (SPICA), 1877, ii., 189.
- Benzylsulphonic acid.** See Tolnene- $\omega$ -sulphonic acid.
- Benzyltartronic acid** (*benzylhydroxymalonic acid*) (CONRAD), 1881, A., 168.
- Benzylthiacetic acid.** See Benzylthioglycollic acid.
- Benzylthiocarbamide** (PATERNO and SPICA), 1876, i., 601.
- Benzylthiocarbamidine** (BERNTHSEN and KLINGER), 1879, A., 650.
- Benzylthioglycollic acid** (*benzylthiacetic acid*) and its amide (GABRIEL), 1880, A., 34.
- Benzylthymol** (MAZZARA), 1882, A., 171.
- o*-Benzyltoluene and its derivatives** (PLASCUDA and ZINCKE), 1873, 1225; 1875, 69.  
secondary products obtained during the preparation of (WEBER and ZINCKE), 1875, 155.  
derivatives, conversion of, into anthracene-derivatives (THÖRNER and ZINCKE), 1878, A., 231.
- p*-Benzyltoluene, action of heated lead oxide on** (BEHR and VAN DORP), 1873, 1135.  
action of heat on (BARBIER), 1874, 1092; 1875, 62.
- Benzyltolylglycollic acid** (MAZZARA), 1882, A., 403.
- Benzyl- $\alpha$ -tolylloxypionic acid, and its salts** (MAZZARA), 1882, A., 1072.
- Benzyl-*m*-xylene** (SÖLLSCHER), 1882, A., 1293.  
action of chromic acid on (BLATZBECKER), 1877, i., 469.
- Benzyl-*m*- and -*p*-xylene** (ZINCKE), 1873, 272.
- Beraunite** (FRENZEL), 1873, 851.
- Berberis Aquifolium*** ("Oregon grape root"), examination of the root of (PARSONS), 1882, A., 1140.
- Berberine** (VAN DER ESPT), 1873, 919; (WEIDEL), 1879, A., 656; (PARSONS), 1882, A., 1140.  
preparation and salts of (LLOYD), 1880, A., 169.
- Berberonic acid** (*pyridine-2:4:5-tricarboxylic acid*) and its salts (WEIDEL), 1879, A., 656; (FÜRTH), 1882, A., 230.
- Bergamot, terpene from** (TILDEN and SIENSTONE), 1877, i., 560.
- Bergamot juice, acidity of** (WARINGTON), 1875, 931.
- Bergenin** (*bergenitol*) (MORELLE), 1882, A., 159.
- Bernadinite**, a resinous mineral from California (STILLMAN), 1879, A., 603.
- Berthierite** (FISCHER), 1881, A., 990.
- Bertholletia excelsa*** (*Brazil chestnut*; *Para nuts*), composition of the fruit of (CORENWINDER), 1874, 88.  
protein crystals from (SACHSSE), 1877, ii., 200; (RITTHAUSEN), 1878, A., 518; (DRECHSEL), 1879, A., 950.
- Beryl** (WILLIAMS), 1874, 28.  
from Alexander Co. (HIDDEN), 1881, A., 1110.

- Beryl** from Eidsvold, Norway (WEBSKY), 1877, ii., 174.  
 from Elba (GRATTAROLA), 1881, A., 1009.  
 from Freistadt in Upper Austria (SCHARIZER), 1882, A., 580.  
 crystalline form of (SCHRATF), 1873, 1011.  
 volume constitution of (SCHRÖDER), 1874, 876.  
 analysis of (WILLIAMS), 1877, ii., 574.
- Beryllium** (*glucinum*) (ATTERBERG), 1876, ii., 382.  
 atomic weight of (REYNOLDS), 1877, i., 579; (NILSON and PETERSSON), 1878, A., 557; 1880, A., 792, 850; (MEYER), 1878, A., 557; 1881, A., 139; (BRAUNER), 1878, A., 704; 1881, A., 224; (NILSON), 1881, A., 140.  
 atomic weight of, as determined by its physiological action (BLAKE), 1882, A., 701.  
 specific heat of (REYNOLDS), 1877, i., 579; (NILSON and PETERSSON), 1878, A., 556; 1880, A., 792, 850.  
 properties and chemical character of (NILSON and PETERSSON), 1881, A., 511.
- Beryllium chlorate and mercury chloride** (ATTERBERG), 1873, 1004.  
 palladious chloride (WELKOW), 1874, 443, 1065.  
 platinochloride (WELKOW), 1874, 229.  
 ammonium, potassium, and sodium fluoride (MARIGNAC), 1874, 24.  
 hydroxide, hyposulphate, iodate, molybdate, selenate and selenite (ATTERBERG), 1873, 1003; 1874, 658.  
 sulphates (MARIGNAC), 1874, 25.  
 ammonium, potassium, and sodium sulphate and sulphite (ATTERBERG), 1873, 1004; 1874, 658.
- Beryllium organic compound:**—  
 propyl (CAHOURS), 1873, 871.
- Beryllium, separation of:**—  
 separation of, from aluminium (ROESSLER), 1878, A., 606.
- Berzeliite** (*kühnite*) (SJÖGREN), 1878, A., 942.
- Bessemer process.** See under Iron.
- Beta vulgaris rubra.* See Beetroot under Agricultural Chemistry.
- Betaine**, identity of lycine and (HUSEMANN), 1876, i., 405.  
 in mangel (SCHULZE and URICH), 1876, i., 420; 1878, A., 87.  
 preparation of (FRÜHLING and SCHULZ), 1877, ii., 627.  
 synthesis of (GRIESS), 1876, i., 404.
- Betaines.** See Alkaloids and Ptomaines.
- Beth-a-barra wood**, colouring matter from (SADTLER and ROWLAND), 1881, A., 1012.
- Betorcinol** (3:5-dihydroxy-p-xylylene), preparation of, and bromo-, chloro-, iodo- and nitroso-derivatives (STENHOUSE and GROVES), 1880, T., 396.
- Betulin** (HAUSMANN), 1877, i., 94.  
 hydrocarbons from (PATERNÒ and SPICA), 1878, A., 569; (FRANCHIMONT and WIGMAN), 1879, A., 469.
- Betulinamaric and betulinic acids** (HAUSMANN), 1877, i., 95.
- Bhreckite** (HEIDLE), 1882, A., 288.
- Bidara Laut* (GREENISH), 1879, A., 1045.
- Bidrai ware**, Indian, composition of (FLIGHT), 1882, T., 139.
- Biebrich scarlet** (V. MILLER), 1880, A., 559, 813; (NIETZKI), 1880, A., 664; 1881, A., 178.
- Biguanide.** See Diguamide.
- Billbergia Leopoldi*, micrographical and chemical researches on the fibres of (SCHLESINGER), 1874, 87.
- Bilberries**, colouring-matter of (ANDRÉE), 1880, A., 927.
- Bile**, chemistry of (HÜFNER), 1879, A., 949; 1882, A., 874.  
 formation of (SHIBO), 1882, A., 878.  
 gases of (CHARLES), 1882, A., 754.  
 action of, on peptones (MOLESCHOTT), 1877, ii., 347.  
 influence of, in digestion (QUINCKE), 1879, A., 549.  
 secretion of, in a dog, and secretion of sodium chloride in (FLÜGGE), 1878, A., 161.  
 human- (JACOBSEN), 1874, 81; (SOKOLOFF), 1876, ii., 107.  
 composition of (TRIFANOWSKY), 1875, 775.  
 ox-, preparation of glycocholic acid from (HÜFNER), 1879, A., 949; 1882, A., 874; (EMICH), 1882, A., 1218.  
 estimation of sulphur, and of taurocholic and glycocholic acid in (KÜLZ), 1873, 536.
- Bile-acids**, presence of, in normal urine (DRAGENDORFF; VOGEL), 1873, 928.  
 products of the decomposition of (LANG), 1876, ii., 533.  
 action of the sodium salts of, when injected into the animal body (FELTZ and RITTER), 1874, 995.  
 appearance of salts of, in the blood and urine caused by certain forms of poisoning (FELTZ and RITTER), 1876, i., 410.

- Bile-acids**, action of, on the alimentary canal of dogs (SCHÜLEIN), 1878, A., 161.  
 derivatives of the (LANG), 1877, i., 481.  
 detection of, in the urine (HILGER), 1876, i., 445.  
 in toxicological researches (CASALI), 1881, A., 1046.
- Bile-pigments** (TARCHAN-MAURAWOFF), 1875, 95; (MALY), 1875, 651; 1876, ii., 210.  
 formation of, in the animal body from blood-pigment (TARCHAN-MAURAWOFF), 1874, 996.  
 in urine (HOPPE-SEYLER), 1875, 902.  
 oxidation-product of (STOKVIS), 1873, 288.  
 and their detection by the spectro-scope (STOKVIS), 1873, 78.  
 detection of (FLEISCHL), 1876, ii., 117; (CAPRANICA), 1882, A., 232.  
 detection of, in the urine (HILGER), 1876, i., 445.
- Bilanic acid**, and its salts (CLEVE), 1881, A., 750.
- Bilic acid** (EGGER), 1879, A., 810.
- Bilirubin**, reactions of, with halogens (THUDICHUM), 1875, 389.  
 and bilirubates, Städeler's hypothesis respecting (THUDICHUM), 1875, 402.  
 artificial production of the colouring matters of human urine from (MACMUNN), 1881, A., 1056.  
 alleged transformation of, into the colouring matter of urine (THUDICHUM), 1875, 396.
- Biliverdin**, some reactions of, and monobrominated derivative of (THUDICHUM), 1876, ii., 27.
- Binnite**, crystalline forms of (SCHRAUF), 1874, 556.
- Biotite** (*cuchlorite*) (PISANI), 1876, ii., 610.  
 lithia-bearing variety of (HAWES), 1877, i., 56.  
 See also Mica.
- Birch**, mineral constituents of (v. SCHROEDER), 1880, A., 313.
- Birch-sap** (HEHNER), 1877, ii., 212.
- Birds**, behaviour of benzoic acid in the organism of (JAFFÉ), 1878, A., 584.  
 origin of uric acid in the organism of (MEYER and JAFFÉ), 1878, A., 443, 595.  
 excretion of uric acid by (CAZENÈVE), 1882, A., 416.  
 secretion from the sebaceous glands of (DE JONGE), 1879, A., 176.
- Birds' egg-shells**, colouring matter of (LIEBERMANN), 1878, A., 590.
- Bischofite**, a mineral from the Stassfurt mines (PFEIFFER), 1878, A., 277.  
 See also Magnesium chloride, hydrated.
- Bis-diacetoxy- and -dihydroxy-diphenylphthalide**, anhydride of (v. PECHMANN), 1882, A., 184.
- Bisdimethylaniline** (LIPPMANN and LANGE), 1881, A., 161.  
*dithio-*, desulphurisation of (HANNMANN and HANNHART), 1879, A., 714.
- Bisdiphenylecyanamide** (WEITH), 1874, 1170.
- Bismuth** (COAD), 1876, i., 451; (MUIR, HOFFMEISTER and ROBBS), 1881, T., 21.  
 native (BURKART), 1874, 31, 551; (CARNOT), 1874, 238, 778, 1146; (GENTH), 1875, 429; (SJÖGREN), 1880, A., 14; 1881, A., 688; (VOM RATH), 1881, A., 548; (DOMEYKO), 1881, A., 998.  
 discovery of a mine of, in Utah (MEADER), 1874, 881.  
 a new mineral species containing (DEL CASTILLO), 1874, 877.  
 argentiferous, recrystallisation of (WINKLER), 1881, A., 354.  
 telluric. See Tetradymite.  
 preparation of pure, and of bismuth compounds (THÜRACH), 1877, i., 283.  
 purification of (MÉHU), 1874, 131, 1024.  
 electrochemical deposition of (BERTRAND), 1876, i., 451; 1877, i., 161.  
 behaviour of, during its passage from the liquid to the solid state (BÖTTGER), 1874, 1136.  
 metallurgy of (VALENCIENNES), 1874, 832.  
 containing arsenic, behaviour of, towards nitric acid (SCHNEIDER), 1880, A., 219.  
 residues (LETTES), 1879, A., 355.
- Bismuth alloys** with the alkali-metals (MÉHU), 1874, 131, 1024.  
 with lead, spontaneous disintegration of (VOGEL), 1873, 603.
- Bismuth compounds** (MUIR), 1876, i., 144; ii., 12; 1877, i., 24, 645; ii., 40, 128; 1878, T., 192; (MUIR, HOFFMEISTER and ROBBS), 1881, T., 21.
- Bismuth salts**, and their use in the detection of potash (CARNOT), 1877, i., 50.  
 halogen, action of nitrous oxide and of sulphur on (MUIR, HOFFMEISTER and ROBBS), 1881, T., 35.

**Bismuth dibromide** (MACIVOR), 1875, 133.  
*tribromide* (MUIR), 1876, i., 145.  
 action of hydrogen and of water on (MUIR), 1876, i., 145.  
*oxybromide (bismuthyl bromide)* (MUIR), 1876, i., 146.  
*oxybromides*, action of ammonia on (MUIR), 1877, i., 27.  
*hydrocarbonate*, native (CARNOT), 1874, 1147.  
*subcarbonate* (COAD), 1876, i., 451.  
*perchlorate*, basic (MUIR), 1876, i., 878.  
 attempts to prepare a chloride of, containing more chlorine than the *trichloride* (MUIR), 1876, i., 146.  
*trichloride* (MUIR), 1876, i., 144.  
 decomposition of (MACIVOR), 1876, i., 192.  
 action of chromyl *dichloride*, of sulphur chloride and of sulphur dioxide on (MUIR), 1878, T., 193.  
 action of hydrogen on (MUIR), 1876, i., 144.  
*oxychloride (bismuthyl chloride)* and the action of hydriodic acid on (MUIR), 1878, T., 193.  
*thio-* (MUIR, HOFFMEISTER and ROBBS), 1881, T., 35.  
 See also Daubreite.  
*chromates and oxydichromate* (MUIR), 1877, i., 645.  
*trifluoride* (MUIR, HOFFMEISTER, and ROBBS), 1881, T., 34.  
*hydroxides* (MUIR), 1877, i., 29, 647; 1878, T., 199; (MUIR, HOFFMEISTER and ROBBS), 1881, T., 21.  
*triiodide* (MUIR), 1878, T., 200; (MUIR, HOFFMEISTER and ROBBS), 1881, T., 33.  
 action of water on: a lecture experiment (MUIR), 1882, T., 4.  
 compounds of, with organic bases (KRAUT), 1882, A., 528.  
*potassium iodide*, preparation of (THRESH), 1880, A., 705.  
 as a test for alkaloids (YVON), 1874, 1105; (MAUGINI), 1882, A., 900.  
*oxyiodide* (MUIR), 1878, T., 201.  
*nitrate*, basic, preparation of, free from arsenic (SCHNEIDER), 1880; A., 219.  
 presence of lead in (CARNOT), 1878, A., 473.  
*subnitrate* (COAD), 1876, i., 451; (RICHE), 1878, A., 841; 1881, A., 141.  
*arsenical* (CHITTENDEN and LAMBERT), 1882, A., 573.

**Bismuth subnitrate**, preparation of (SCHNEIDER), 1882, A., 18.  
 presence of lead in (CHAPUIS and LINOSSIER), 1879, A., 80.  
 commercial, presence of silver in (EKIN), 1873, 308.  
 analysis of (BAUDRIMONT), 1881, A., 196.  
*nitrates* (YVON), 1877, ii., 572.  
*oxides* (MUIR), 1877, i., 649.  
 preparation, properties and reactions of (MUIR, HOFFMEISTER and ROBBS), 1881, T., 21.  
*trioxide (bismuthous oxide)*, native (CARNOT), 1874, 1147.  
 hot, action of bromine and of chlorine on (MUIR), 1877, i., 26.  
 action of aqueous hydrochloric acid on (MUIR), 1879, T., 335.  
 action of ammonia on (MUIR), 1877, i., 27.  
 solubility of, in sodium carbonate (CHAPMAN), 1877, i., 490.  
*pentoxide (bismuthic acid)*, preparation and action of heat on (MUIR), 1876, i., 149.  
 specific gravity of (BRAUNER and WATTS), 1881, A., 220.  
 attempts to prepare salts of (MUIR), 1876, i., 151.  
*selenide*. See Frenzelite.  
*sulphide*. See Bismuthite.  
**Bismuth organic compounds**:—  
*ferri- and ferro-cyanide* (MUIR), 1877 i., 653; ii., 40.  
*mercaptide* (CLAËSSON), 1877, ii., 295.  
**Bismuth, detection and estimation**:—  
 detection of (v. KOBELL), 1873, 531; (MUIR), 1877, ii., 45; (HUTCHINGS), 1877, ii., 922; (THRESH), 1880, A., 752.  
 estimation of (BUISSON and FERRAY), 1874, 710; (MUIR), 1876, i., 483; 1877, i., 658; ii., 674; 1878, T., 70; (PELLET), 1877, i., 227; (KUHARA), 1880, A., 753; (MUIR and ROBBS), 1882, T., 1.  
**Bismuth glance**. See Bismuthite.  
**Bismuthic acid**. See Bismuth *pentoxide*.  
**Bismuthiferous tesseral pyrites** (RAMSAY), 1876, i., 153.  
**Bismuthinite** (SILLIMAN), 1874, 344.  
**Bismuthite** (*bismuth glance; bismuthiac*) (CARNOT), 1874, 1146; (v. ZEPHAROVICH), 1879, A., 364; (WEISBACH), 1881, A., 263; (VOM RATH), 1881, A., 548; (LIVERSIDGE), 1881 A., 992.  
*selenious*. See Frenzelite.



- Bismuth-mispickel** (CARNOT), 1874, 1147.
- Bismuth ores** from the district of Tazua in Bolivia (VOM RATH), 1881, A., 548.
- of Bolivia, Peru, and Chili (DOMEYKO), 1881, A., 998.
- from North America (GENTH), 1875, 429.
- in the United States (BURKART), 1874, 31, 551.
- from Wernland (SJÖGREN), 1880, A., 14; 1881, A., 688.
- "Bismuthosphærite"** (WINKLER), 1878, A., 17; (WEISBACH), 1878, A., 116.
- Bismuthotetrabismuthyl dichromate** (MUIR), 1877, i., 645.
- Bismuthyl bromide.** See Bismuth oxybromide.
- chloride. See Bismuth oxychloride.
- iodide. See Bismuth oxyiodide.
- Bismutite** (FRENZEL), 1874, 449.
- Bismutoferrite.** See Hypochlorite.
- Bitters,** foreign, detection of, in beer (DRAGENDORFF), 1874, 818.
- Bitumen** from the action of heat on the mixed vapours of benzene and toluene (CARNELLEY), 1880, T., 714.
- deposits of the valley of the Pescara, South Italy (MOFFAT), 1875, 299.
- See also Asphalt.
- Biuret** (WEITH), 1878, A., 141.
- formation of (BAUMANN), 1875, 1187.
- action of hypochlorites and hypobromites on (FENTON), 1879, T., 14.
- silver-compounds of (BONNÉ and GOLDENBERG), 1874, 683.
- cyanurate (HERZIG), 1882, A., 167.
- Bixin** and its salts, and chemical reactions (ETTI), 1874, 907; 1878, A., 739.
- Bjelkite** (SJÖGREN), 1880, A., 14; 1881, A., 688.
- Blackening** (ANON.), 1882, A., 444.
- Bladder senna.** See *Colutea arborescens*.
- Blast furnaces,** distribution of temperature in (SIEMENS), 1873, 666.
- combustion in (CHURCH), 1879, A., 841.
- chlorine compounds in (MEINEKE), 1876, i., 452.
- liquid cyanides and chlorides in (ANON.), 1879, A., 989.
- formation of manganiferous iron in (ANON.), 1878, A., 176.
- gases from (KENT), 1876, i., 969.
- deposition of carbon and other bodies from the gases of (PATTINSON), 1877, ii., 375.
- Blast furnaces gases,** combustibility of (PATTINSON), 1877, ii., 375.
- analysis of white fumes from, near Longwy (GRUNERT), 1876, ii., 226.
- use of calcined lime as a flux in (BEIL), 1876, i., 791.
- Bleaching** (CLEMENT), 1882, A., 128.
- application of sulphurous anhydride in (MOYRET), 1882, A., 1337.
- animal textile fibres (ANON.), 1879, A., 99.
- vegetable fabrics (BEYRICH), 1879, A., 761.
- Bleaching powder** (DAVIS), 1873, 1169.
- formation and constitution of (KOLB), 1873, 200; (GÖPNER), 1874, 195, 655; (SCHORLEMMER), 1874, 335; (RICHTERS and JÜNCKER), 1874, 825; (WOLTERS), 1875, 236, 422; (OPL), 1876, i., 39; (STAHLSCHMIDT), 1876, ii., 604; 1877, i., 279; (LUNGE and SCHAEPI), 1880, A., 789.
- distillation of dry, and of solutions of, after addition of one-fifth normal nitric, hydrochloric and sulphuric acids (KOPFER), 1875, 716.
- action of, on amines (TCHERNIAC), 1876, i., 913.
- action of dilute mineral acids on (KOPFER), 1875, 713.
- action of, on propylic, butylic, and amylc alcohols (REGNAULT and HARDY), 1880, A., 456.
- calcium hypochlorite from (KING-ZETT), 1875, 404.
- analysis of (WHEWELL), 1879, A., 505.
- detection of, in water (NESBIT), 1882, A., 1316.
- See also Calcium hypochlorite.
- Blende** (*sphalerite*; *zinc blende*), crystallography of a variety of (HAUTEFEUILLE), 1882, A., 369.
- American, indium in (CORNWALL), 1874, 34.
- from an antimony mine (SMITH), 1875, 433.
- from Rothenburg, analysis of (HILGER), 1880, A., 857.
- See also Zinc sulphide.
- Bletia Tankervilleae*, indigo-blue from (SCHNCK), 1878, A., 885; 1879, A., 534.
- Blödite** (*astracanite*) (SCHIMPER), 1878, A., 118.
- Blood,** influence of the continued use of sodium carbonate on the composition of (DUBELIER), 1881, A., 1161.
- physical chemistry of (HÜFNER), 1881, A., 111.

- Blood**, physico-chemical forces in vital phenomena (BECQUEREL), 1875, 372, 528.
- determination of the absolute mass of (STEINBERG), 1873, 646.
- decomposition of, by *Bacillus subtilis* (KAUFMANN), 1878, A., 593.
- gases of the (MATHIEU and URBAIN), 1874, 809.
- effect of maté on the gases in (D'ARSONVAL and COUTY), 1881, A., 1051.
- alkalinity of (LIASSAR), 1874, 811.
- coagulation of the (MATHIEU and URBAIN), 1876, i., 87.
- coagulation of the, part played by gases in the (MATHIEU and URBAIN), 1875, 372.
- coagulation of the, influence of *o*- and *m*-phosphoric acids on the (ORÉ), 1876, i., 725.
- coagulation of the, as influenced by saline solutions (GAUTIER), 1875, 1207.
- coagulation of the, relation of, to white corpuscles (WOOLDRIDGE), 1882, A., 322.
- coagulation of the, cause of the spontaneous, on its issue from the organism (GLÉNARD), 1876, i., 279.
- absorption of carbon monoxide by (GRÉHANT), 1878, A., 994.
- absorption of carbonic anhydride by (SETSCHENOFF), 1874, 486; 1877, ii., 630.
- distribution of the carbonic anhydride contained in the, between the corpuscles and the serum (FREDERICQ), 1877, ii., 909.
- oxidising power of (SCHÜTZENBERGER and RISLER), 1873, 643.
- quantity of oxygen which can be absorbed by, under various atmospheric pressures (BERT), 1873, 643, 762, 1249; 1875, 656.
- arterial, tension of oxygen in (HERTER), 1879, A., 811.
- of animals living in elevated regions, richness in oxygen of (BERT), 1882, A., 1120.
- behaviour of potassium salts in (BUNGE), 1879, A., 816.
- occurrence of carbamic acid, and oxidation of glycocine, leucine, and tyrosine in (DRECHSEL), 1876, i., 701.
- distribution of iron in the constituents of (BOUSSINGAULT), 1873, 288, 398.
- condition of the iron in (PAQUELIN and JOLLY), 1874, 996.
- Blood**, peptone in (HOFMEISTER), 1882, A., 78.
- presence of dissolved earths and phosphoric acid in alkaline (FOKKER), 1873, 925.
- distribution of phosphates in (JOLLY), 1879, A., 662.
- effect of albumin on the solubility of tricalcium phosphate in the (MERCADANTE), 1876, i., 280.
- saccharifying ferment of (PLÓSZ and TIEGEL), 1873, 1245.
- critical experiments on the formation of sugar in the (BERNARD), 1877, i., 485.
- physiology of sugar in relation to (PAVY), 1877, ii., 909; 1880, A., 486; 1881, A., 1058; 1882, A., 322.
- urea in (PICARD), 1877, i., 329, 486.
- menstrual, abnormal presence of uric acid in (BOUCHERON), 1881, A., 1161.
- conversion of, into a soluble powder (LE BON), 1876, i., 280.
- function and decomposition of fat taken in food in the (RÖHRIG), 1876, i., 948.
- secretion of acid urine from alkaline (MALY), 1876, i., 875.
- expulsion of carbonic oxide and nitric oxide from (PODOLINSKI), 1873, 397.
- appearance of biliary salts in, caused by certain forms of poisoning (FELTZ and RITTER), 1876, i., 410.
- putrefied, experiments showing that the poisonous properties of, arise from organised ferments (FELTZ), 1877, ii., 506.
- formation of the colouring matter of urine from (HOPPE-SEYLER), 1875, 96.
- action of amylie and sodium nitrites and nitric oxide on (GIACOSA), 1879, A., 816.
- action of magenta introduced into the (FELTZ and RITTER), 1877, i., 487.
- action of compressed oxygen on (BERT), 1878, A., 236.
- action of ozone on (DOGIEL), 1876, ii., 105.
- in apnœa (EWALD), 1873, 1247.
- in splenic leuchæmia (v. GORUP-BESANEZ), 1874, 811.
- of a dog, quantity of water in (FLÜGGE), 1878, A., 161.
- of wild graminivorous animals, normal presence of copper in (CLOËZ), 1877, ii., 346.
- of mammals, birds and fishes, number of red corpuscles in the (MALASSEZ), 1873, 289.

- Blood** of polyps and crabs, and of the squalus and ray (RABUTEAU and PAPILLON), 1873, 1150.  
 disinfection and preservation of, for agricultural purposes (VAUTELET), 1880, A., 929.  
 analyses of (BUNGE), 1877, i., 215.  
 detection of, in dilute solutions (BERG), 1874, 608.  
 testing of aqueous liquids for (SCHWARTZ), 1877, i., 754.  
 testing for, with sodium tungstate (SONNENSCHNEIN), 1874, 296.  
 detection of, by formation of hæmin crystals (SELM), 1873, 1165.  
 detection of carbonic oxide in (WEYL and V. ANREP), 1880, A., 817.  
 detection of nitrous acid in (BERTONI and RAIMONDI), 1882, A., 1231.  
 apparatus for estimating carbonic oxide in (SETSCHENOFF), 1874, 486; (HÜFNER), 1881, A., 112.  
 estimation of hæmoglobin in (QUINQUAUD), 1873, 1245; (RAJEWSKY), 1876, ii., 216; (HÜFNER), 1879, A., 835.  
 human, spectroscopic estimation of the amount of hæmoglobin in (WISKEMANN), 1877, ii., 808.  
 estimation of oxygen in (HÜFNER), 1879, A., 835.  
 estimation of glucose in (CAZENEUVE), 1879, A., 557; (PICARD), 1879, A., 674.  
 estimation of sugar in (D'ARSONVAL), 1879, A., 674.  
 estimation of urea in (HAYCRAFT), 1882, A., 667.  
**Blood-ash**, analysis of (JARISCH), 1877, ii., 940.  
**Blood-corpuscles** and serum, distribution of the carbonic anhydride in blood, between the (FREDERICQ), 1877, ii., 909.  
 a phosphorised substance contained in (THUDICHUM and KINGZETT), 1876, ii., 255.  
 colourless and red, origin of (SCHMIDT), 1875, 175; 1876, i., 945.  
 red, behaviour of, to colouring matters and to tannic acid (LAPTSCHINSKY), 1875, 1275.  
 white, relation of, to the coagulation of the blood (WOOLDRIDGE), 1882, A., 322.  
 certain transitional forms between the red and colourless, in mammalian blood (SCHMIDT), 1876, i., 946.  
 number of red, in the blood of mammals, birds, and fishes (MALASSEZ), 1873, 289.  
**Blood-crystals** (V. STRUVE), 1881, A., 751.  
 preparation of (GSCHIEDLEN), 1878, A., 518.  
**Blood-fibrin** (DEUTSCHMANN), 1876, i., 944.  
**Blood-letting**, amount of metamorphosis of albumin after (V. VOIT and BAUER), 1873, 288.  
 tissue-change in the animal body after (BAUER), 1873, 644.  
 variations in the composition of the serum after (BIZZAZERO and SANQUIRICO), 1882, A., 751.  
**Blood-pigments** (BÉCHAMP), 1874, 811; 1875, 174; (JÄDERHOLM), 1878, A., 236.  
 spectrum of (GAENGE), 1876, ii., 646; (VOGEL), 1877, i., 331.  
 relation of chlorophyll to (LIEBERMANN), 1877, ii., 208.  
 formation of bile-pigment from, in the animal body (DE TARCHANMAURAWOFF), 1874, 996.  
**Blood-serum**, egg-albumin and milk, further investigations of, by dialysis, by means of sized paper (SCHMIDT), 1876, i., 87.  
 variations in the composition of, after blood-letting (BIZZAZERO and SANQUIRICO), 1882, A., 751.  
 constituents of, by which the absorption of carbon dioxide is determined (SETSCHENOFF), 1878, A., 519.  
 and corpuscles, distribution of the carbonic anhydride contained in blood between the (FREDERICQ), 1877, ii., 909.  
 albuminoids of (HEYNSIUS), 1875, 469; 1876, ii., 208; (FREDERICQ), 1882, A., 75.  
 rotatory power of the albuminoid substances in, and their estimation by this means (FREDERICQ), 1882, A., 110.  
 "acidity" of (MALY), 1882, A., 1221.  
 estimation of albumin in (PULS), 1876, ii., 666.  
**Blood solution**, reduced, preparation of (HÜFNER), 1881, A., 112.  
 action of zinc on (V. STRUVE), 1874, 174.  
**Blood-stains** (VITALI), 1880, A., 926.  
 examination of (ANON.), 1874, 393.  
 diagnosis of, by measurement of the blood corpuscles (V. STRUVE), 1882, A., 342.  
 detection of (GUNNING), 1873, 298; (REICHARDT), 1876, i., 782; (DRAGENDORFF), 1882, A., 561.

- Blossoms**, influence of smoke on the development of (DA CANTO), 1880, A., 177.
- Blowpipe**, alcoholic vapour- (RÁKÓCZY), 1873, 92.  
cheap gas- (BENTE), 1877, ii., 275.  
gas-, use of oil-gas for (LOHSE), 1878, A., 467.  
self-acting, of simple construction (LANDAUER), 1876, i., 517.  
aluminium plate as a support in the use of (HUTCHINGS), 1878, A., 166.
- Blowpipe-deposits**, thin, colours of (KOYL), 1881, A., 489.
- Blowpipe-stand** (LANDAUER), 1876, i., 37.
- Blue**, Egyptian (DE FONTENAY), 1874, 833.  
a new alkaline solid (JEANMAIRE), 1875, 923.  
stamp colour (BÖTTGER), 1873, 423.  
See also Colouring matters.
- Body**, temperature of the, influence of salicylic acid and sodium salicylate on (GEDL), 1877, i., 732.  
human, detection of zinc and copper in (RAOULT and BRETON), 1877, ii., 928.
- Body-temperature** and tissue-metamorphosis, relation between in Amphibia (SCHULZ), 1877, i., 327.
- Bog-butter**, composition of (LIVERSIDGE), 1881, A., 983.
- Boiler**, steam, miniature, explosion of (GRÄGER), 1873, 1002.
- Boiler incrustation** (FISCHER), 1874, 1021; (ANON.), 1881, A., 328.  
combustible (ANON.), 1873, 660.  
formation of (ANON.), 1876, ii., 673.  
composition of (FRANCIS), 1877, ii., 814; (VOHL), 1877, ii., 919; (SMETHAM), 1879, A., 839.  
preventatives of (DE HAËN), 1874, 609; 1876, i., 799; (ANON.), 1875, 676; 1877, ii., 244; (BURFITT), 1876, i., 134; (VIBRANS), 1876, i., 450; (FISCHER), 1876, ii., 334.
- Boiler tubes**, deposits in (HAYES), 1875, 294.
- Boilers**, a peculiar kind of corrosion of (WARTHA), 1876, ii., 219.  
heating steam (FISCHER), 1879, A., 1070.  
wearing of (FISCHER), 1879, A., 410.
- Boiler-waters**, analysis of (STOCK), 1879, A., 273.  
purification of (WEINLIG), 1874, 1022; (ANON.), 1876, i., 132; (DE HAËN), 1876, i., 799; (HÉTET), 1878, A., 351.
- Boiling-points**, absolute (HANDL and PRIBRAM; LADENBURG), 1878, A., 633.  
law of corresponding (DÜHRING), 1881, A., 71.  
Kopp's law of constant differences of (WINKELMANN), 1877, ii., 822; 1881, A., 71.  
of alcohols (GRIMSHAW and SCHORLEMMER), 1873, 1082.  
of aldehydohydroxybenzoic acids (TIEMANN), 1879, A., 924.  
of ethereal salts of alkyloxy- and hydroxy-acids (SCHREINER), 1879, A., 522.  
of chlorine tetroxide (SCHACHERL), 1881, A., 345.  
of solid elements, thermochemical relation between melting points and (WIEBE), 1879, A., 690.  
of substitution derivatives of chlorobromethane (DENZEL), 1879, A., 368.  
of cymenes (WRIGHT), 1873, 696.  
of the chlorinated ethanes, relation of the (STAEDEL), 1878, A., 652.  
of ethane and ethylene derivatives (SABANÉEFF), 1881, A., 399.  
of the ethers derived from coumarins (PERKIN), 1881, T., 443.  
of hydroxy-tolualdehydes and -toluic acids (TIEMANN), 1879, A., 924.  
of liquids, determination of (THORPE), 1880, T., 158, 371.  
of metals and metallic salts (CARNELLEY and WILLIAMS), 1879, T., 563; 1880, T., 125.  
of metameric compounds, explanation of the differences in the (NAUMANN), 1874, 529, 563.  
of homologous organic compounds, law of (PIERRE and PUCHOT), 1873, 257.  
of paraffins (GOLDSTEIN), 1879, A., 765; 1882, A., 374.  
of the chlorinated derivatives of toluene (HINRICHS), 1875, 728.  
of isovaleric acid and ethers (PIERRE and PUCHOT), 1873, 1017.  
of xylenols (TIEMANN), 1879, A., 924.
- Boiling-point determinations** (JONES), 1878, T., 175; (CARNELLEY and WILLIAMS), 1878, T., 281; (HANDL and PRIBRAM), 1878, A., 633; PAWLEWSKI), 1881, A., 642.  
errors in (THORPE), 1880, T., 374.  
apparatus for regulating the atmospheric pressure in (STAEDEL and HAHN), 1879, A., 346.  
at the normal pressure (BUNTE), 1873, 1103.  
with small quantities of liquid (MAIN), 1877, i., 680.



- Boldo**, alkaloids from (BOURGOIN and VERNE), 1873, 179.
- Boles**, characters of certain (KENNGOTT), 1874, 966.
- Boletus Laricis* (*larch agaric*), resin of (MASING), 1876, i., 612.
- Boletus luridus*, colouring-matter of (CUGINI), 1877, ii., 791.
- Bolivite** (DOMEYKO), 1881, A., 998.
- Bone-ash**, absorption of gypsum by (ANTHON), 1875, 386.
- Bone-black**. See Animal charcoal.
- Bone-meal**. See Agricultural Chemistry.
- Bone-phosphates**, composition of (AEBY), 1873, 354; 1874, 813; (WIBEL), 1874, 591.
- Bones**, chemistry of (MALY and DONATH), 1874, 277.  
development of (HEITZMANN), 1874, 596.  
metamorphoses of (AEBY), 1873, 923.  
experimental modifications of the composition of (PAPILLON), 1873, 518.  
influence of food on the formation of (LEHMANN), 1878, A., 992.  
composition of, after varied feeding (WEISKE), 1875, 277.  
composition of, in animals fed with food containing varying proportions of lime and phosphoric acid (WEISKE and WILDT), 1874, 489.  
colouring of, through madder feeding (WEISKE), 1874, 490.  
can inorganic constituents be withdrawn from the, by the introduction of lactic acid into the intestines? (HEISS), 1877, i., 216.  
replacement of lime in (KÖNIG), 1875, 95.  
loss of lime in, on an insufficient supply of lime (FORSTER), 1877, ii., 792.  
extraction of fat from, by light petroleum (THIEL), 1882, A., 123.  
steamed and dissolved, oats manured with (EMMERLING), 1882, A., 333.  
of a carnivorous animal (SCHRODT), 1877, i., 328.  
of the American buffalo, composition of (MALLET), 1875, 375.  
brittleness of the, in cattle (NESSLER), 1873, 924, 1244.  
of rabbits of various ages, composition of (WILDT), 1873, 290.
- Boracetone**. See Acetoneboric acid.
- Boracic acid**. See Boric acid under Boron.
- Boracite** (BAUNHAUER; MALLARD), 1881, A., 397; (PRECHT and WITTJEN), 1882, A., 148.
- Boracite**, pseudomorph of parasite after (GEINITZ), 1877, i., 698.  
crystalline forms of (SCHRAUF), 1874, 556.  
See also Magnesium borate.
- Borax**. See Sodium biborate.
- Boric acid and borates**. See under Boron.
- Boric anhydride**. See Boron oxide.
- Borneocamphene**. See Camphene under Terpenes.
- Borneol** (*camphol*; *Borneo-camphor*) (KACHLER), 1878, A., 512; 1879, A., 1039.  
from colophene (ARMSTRONG and TILDEX), 1879, T., 752, 755.  
etherification of (MENSCHUTKIN), 1882, A., 817.  
relation of, to camphor (KACHLER), 1874, 156.  
sodium- (KACHLER and SPITZER), 1882, A., 66.  
bromide and chloride (KACHLER), 1879, A., 1039.
- Borneol** (*Ngai camphor*) (PLOWMAN), 1874, 582.
- Borneol**, inactive (MUIR), 1880, T., 686.  
action of acids on (DE MONTGOLFIER), 1878, A., 893.
- Borneols**, isomeric (DE MONTGOLFIER), 1876, ii., 79; 1878, A., 891; 1879, A., 944.  
rotatory power of the (DE MONTGOLFIER), 1877, i., 78; ii., 626.
- Borneolcarboxylic acid**, sodium salt of (KACHLER and SPITZER), 1882, A., 66.
- Bornite** (*peacock copper ore*) from Belgium (DE KONINCK), 1873, 1114.  
See also Tetradymite.
- Bornyl acetate** (DE MONTGOLFIER), 1878, A., 894.  
oxidation of (SCHRÖTTER), 1882, A., 66.  
carbamate (HALLER), 1882, A., 625, 1213.  
carbonate (HALLER), 1882, A., 528.
- Borocalcite**. See Ulexite.
- Borocitrates** (SCHEIBE), 1881, A., 88.
- Boron** (HAMPE), 1877, i., 273.  
mineral from Chili (REICHARDT), 1879, A., 19.  
position of, in the series of elementary bodies (ETARD), 1881, A., 20.  
quantivalence of (MICHAELIS and BECKER), 1880, A., 395.  
pentad character of (FRANKLAND), 1876, ii., 619.  
specific heat of (MIXTER and DANA), 1874, 118; (WEBER), 1876, i., 866.  
flame, exhibition of green colour of (MERZ and WEITH), 1874, 334.

**Boron-copper compound**,  $B_2Cu_3$  (MARSDEN), 1880, T., 672.

**Boron chloride**, preparation of (SCHNITZLER), 1874, 959.  
 action of nitrogen tetroxide on (GEUTHER), 1874, 539.  
 reactions of (TROOST and HAUTEFEUILLE), 1873, 351; 1876, ii., 599.  
 oxytrichloride (COUNCLER), 1878, A., 775.  
 attempts to prepare (MICHAELIS and BECKER), 1881, A., 682.

**fluoride**, action of, on aldehydes, acetones and carbonyls (LANDOLPH), 1877, ii., 863; 1878, A., 774; 1879, A., 914.  
 action of water on (HAMMERL), 1880, A., 435.  
 potassium fluoride (ANON.), 1873, 39.

**hydride**, preparation and properties of (JONES), 1879, T., 41; (JONES and TAYLOR), 1881, T., 213.

**and hydrogen**, solid compounds of (REINITZER), 1881, A., 507.

**oxide** (*boric anhydride*), heat disengaged by the hydration of (DITTE), 1878, A., 194.

**Boric acid** (*boracic acid*) (DE LUYNES), 1876, i., 38; (DIEULAFAIT), 1878, A., 11.  
 existence of, in notable quantities in the Dead Sea (DIEULAFAIT), 1882, A., 1037.  
 existence of, in saline lakes and natural saline waters (DIEULAFAIT), 1881, A., 1019.  
 properties of (DITTE), 1878, A., 194.

**blowpipe beads**, spectra of (HORN), 1874, 642.

**action of**, on vegetation (PELIGOT), 1877, i., 223.

**influence of**, on acetous fermentation (HERZEN), 1880, A., 819.

**as a preservative** (ENDEMANN), 1880, A., 767.

**as a preservative for milk and beer** (HIRSCHBERG), 1873, 100; 1876, i., 413.

**ethers of** (SCHIFF), 1877, ii., 874; (COUNCLER), 1878, A., 21.

**salts of** (BENEDIKT), 1874, 1134.

**alkaline salts of**, solubility of magnesium carbonate in (WITTSTEIN), 1876, i., 189.

**crystalline salts of**, preparation of, in the dry way (DITTE), 1874, 127.

**Fluoboric acid and its salts** (v. BASAROFF), 1874, 1134.

**Fluoboric acid**, ethylene derivative of (LANDOLPH), 1880, A., 28.

**Fluoxyboric acid** (v. BASAROFF), 1874, 1056.

**Hydrofluoboric acid**, properties of (LANDOLPH), 1878, A., 576.

**Hydrofluoboric acids**, two new (LANDOLPH), 1880, A., 28.

**Tungstoboric acid**, preparation of (KLEIN), 1882, A., 18.

**Boroduodecitungstic and borodecitungstic acids and their salts** (KLEIN), 1881, A., 23.

**Borotungstates** (KLEIN), 1880, A., 612; 1881, A., 224, 879; 1882, A., 17.

**Boron, organic compounds** (FRANKLAND), 1876, ii., 618.  
 analyses of (LANDOLPH), 1880, A., 61.

**Boron, detection and estimation of:—**  
 detection of (BIDAUD), 1873, 1055; (KAEMMERER), 1874, 1005; (ILES), 1877, ii., 352; (DIEULAFAIT), 1878, A., 11; (v. GILM), 1878, A., 645.  
 reaction of, in presence of mannitol (KLEIN), 1878, A., 555.  
 detection of, by means of the microscope (REINSCH), 1882, A., 245.  
 estimation of (DITTE), 1876, i., 107; (v. BERG), 1877, i., 736.  
 estimation of, in presence of silicon and fluorine (DITTE), 1875, 1288.

**Boronatrocalsite**. See Ulexite.

**"Bostonite"** ("*Canadian fibre*") (KNOPS), 1882, A., 116.

**Botanical preparations**, liquid for the preservation of (NESSLEIT), 1880, A., 596.

**Bottle glass**. See Glass.

**Bottle-stones** (*pseudochrysolites*) of Moravia and Bohemia and of Trebitsch (MAKOWSKY; TSCHERMAK; v. HAUER), 1882, A., 581.

**Bournonite** from Waldenstein, Carinthia (v. ZEPHAROVICH), 1877, i., 583.  
 analysis of (WATT), 1874, 346.

**Bowenite** from New Zealand (BERWERTH), 1881, A., 377.

**Bowlingite** (HANNAY), 1878, A., 15; (FISCHER), 1881, A., 990.

**Box-trees**, use of, in agriculture (PIERRE and SERANE), 1882, A., 93.

**Brackebuschite**, a new vanadate, analysis of (RAMMELSBERG), 1882, A., 150.

**Brain**, chemical researches on (GOBLEY), 1875, 92.  
 some new constituents of (PARCUS), 1882, A., 235; (THUDICHUM), 1882, A., 538.

- Brain**, composition of the grey and white substances of the (PETROWSKY), 1873, 922.  
alkaloid occurring in (SELM), 1876, i., 938.  
human, amount of cholesterin in (BENECKE), 1882, A., 78.  
occurrence of nuclein in (V. JAKSCH), 1877, i., 221.  
glycerolphosphoric acid and its salts as obtained from the phosphorised constituents of the (THUDICHUM and KINGZETT), 1876, ii., 20.  
lecithin in (GOBLEY), 1874, 908; (GAMGEE and BLANKENHORN), 1879, A., 950; 1881, A., 1047; (GAMGEE), 1881, A., 1047.  
putrefaction-products of (SELM), 1877, i., 730; (STÖCKLY), 1882, A., 77.
- Brain sugar**. See Cerebrose.
- Bran**, amount of nitrogenous matter in (WIGNER), 1878, A., 1016.  
composition of the ashes of (PECKHAM), 1879, A., 961.  
preparation of oxalic acid from (THORN), 1874, 297.
- Brandisite** (TSCHERMAK and ŠIPÖCZ), 1881, A., 233.
- Brandy**, estimation of fusel oil in (MARQUARDT), 1882, A., 1235, 1327.  
distillery residues, composition of (DE LEEUW), 1881, A., 757.
- Brandyng**, influence of, on the weight of the dry extract of wine (GAUTIER), 1877, i., 750.
- Brasilein**. See Brazilein.
- Brasilin**. See Brazilin.
- Brass**, colouring of (SCHWARZ), 1876, i., 796; 1878, A., 188.  
colouring of, blue, like steel (ANON.), 1873, 1273.  
coating of, with gold varnish (ANON.), 1875, 1303.  
method for finishing (DIETLEN), 1876, ii., 227.
- Brass and zinc couple** (GLADSTONE and TRIBE), 1879, T., 575.
- Brassic acid**, decomposition of (GOLDSCHMIEDT), 1878, A., 28.
- Brassica Napus* and *B. Rapa* seeds, distribution of myronic acid in (RITTHAUSEN), 1882, A., 243.
- Bravaisite**, a new mineral (MALLARD), 1879, A., 442.
- Brazil chestnut**. See *Bertholletia excelsa*.
- Brazilein** (LIEBERMANN and BURG), 1877, ii., 194.  
and new compounds of (HUMMEL and PERKIN), 1882, T., 367, 373.
- Brazilein**, composition of (BENEDIKT), 1876, i., 250.  
action of hydrobromic and of hydrochloric acid on (HUMMEL and PERKIN), 1882, T., 376.
- isoBrazilein*, bromhydrin, chlorhydrin, and acid sulphate of (HUMMEL and PERKIN), 1882, T., 375.
- Brazilin** (*brasilin*) (KOPF), 1873, 899; (LIEBERMANN and BURG), 1877, ii., 193; (MEYER), 1880, A., 248.  
bromo- and chloro- (LIEBERMANN and BURG), 1877, ii., 194.
- Brazil-wood**, detection of, in wine (GAUTIER), 1877, ii., 935.
- Bread**, effect of alum on (MOTT), 1879, A., 1077.  
formation of ultramarine during the incineration of (EDMUND), 1876, i., 880.  
vegetable parasites of (ROCHARD and LEGROS), 1873, 85.  
poisoning of (ANON.), 1873, 424.  
Croatian, analysis of (JANEČEK), 1882, A., 1151.  
detection and estimation of alum in (DUPRÉ), 1874, 916; 1878, A., 915; 1879, A., 483; (CLEAVER), 1874, 1101; (THRESH), 1876, i., 109; (WANKLYN), 1877, i., 231; (BELL), 1877, ii., 510; (YOUNG), 1877, ii., 510; 1879, A., 483; (WELBORN), 1878, A., 1009; (PENNEY), 1879, A., 556.
- Bread making** in the United States (SACC), 1876, i., 811; 1877, i., 240.
- Breccia**, volcanic, useful for a top dressing (CARNOT), 1881, A., 1016.
- Breislakite** (V. LASAULX), 1879, A., 206.
- Brunnerite**, examination of (V. KOKSCHAROFF), 1881, A., 523.
- Brewers' grains**, method of preserving (SALOMON; HERTER), 1881, A., 951.
- Brewing**, new process for (PASTEUR), 1873, 958.  
interference of bacteria with (MARPMANN), 1881, A., 1090.  
gelatinised grain for (BERSCH), 1882, A., 1337.  
substitutes for malt in (HANAMANN), 1876, i., 807.  
division of the nitrogen of barley among the products of (ZMERZLIKAR), 1876, ii., 345.  
analyses of water for (KRANDAUER), 1879, A., 1078.  
in Japan (ATKINSON), 1882, A., 432.  
See also Malt and Barley.
- Brick-clay**, pyrometric and analytical investigation of a yellow and a red (BISCHOF), 1874, 1009.

- Brick-making**, value of magnesium and calcium compounds in (BISCHOF), 1880, A., 831.
- Bricks**, burning of, in annular kilns (FISCHER), 1878, A., 690, 761, 921. colours of (SEGER), 1873, 951. analysis of (KERN), 1877, ii., 356.
- Brine-springs**. See under Water.
- Brittle silver ore**. See Stephanite.
- Brochantite**, artificial formation of (MEUNIER), 1878, A., 476.
- Brochantite-group** (SCHRAUF), 1874, 556.
- tri*Brom-*o*-acetaldehyde. See Bromal.
- Bromacetamide** (KESSEL), 1879, A., 221.
- di*Bromacetamide (BENEDIKT), 1878, A., 499.
- Brom-*o*-acetamidobenzoic acid** (JACKSON), 1881, A., 735.
- Bromacetanilide**. See Acetanilide.
- Bromacetic acid**. See Acetic acid.
- Bromacetic bromide**. See Acetic bromide, brom-.
- Bromacetocarbamide**, and the action of ammonia on (MÜLLER), 1874, 48.
- Brom- $\alpha$ -acetonaphthalides**, 4-*mono*- and 2:4-*di*- (MELDOLA), 1879, A., 165.
- 1-Brom- $\beta$ -acetonaphthalide** (COSINER), 1881, A., 606.
- Bromacetone**. See Acetone.
- Bromacetophenone**. See Acetophenone.
- $\omega$ -*tri*Bromacetophenone-*o*-carboxylic acid (GABRIEL and MICHAEL), 1878, A., 229, 426, 734.
- 5-Brom-*o*-acetotoluidide**, and 3-brom-*p*-acetotoluidide (WROBLEWSKI), 1874, 51; 1878, A., 977.
- di*Brom-*m*-acetotoluidide (NEVILE and WINTHER), 1880, T., 434.
- Bromacetovanillic acid** (MATSMOTO), 1878, A., 502.
- Bromacetylbenzene**. See Acetophenone,  $\omega$ -brom-.
- tetra*Bromacetyldaphnetin (STÜNKEL), 1879, A., 469.
- Bromacetylene** (DEMOLE), 1878, A., 401.
- di*Bromacetylenedicarboxylic acid (v. BANDROWSKI), 1880, A., 160.
- Bromacetylenic tetra**bromide. See Ethane, *penta*brom-.
- di*Bromacetylhydrocærulignone (HAYDUCK), 1876, ii., 516.
- di*Bromacetylquercetin (LIEBERMANN and HAMBURGER), 1879, A., 945.
- tri*Bromacetylresorcinol (CLAASSEN), 1878, A., 868.
- di*Bromacetylrhannetin (LIEBERMANN and HOERMANN), 1879, A., 272.
- di*Bromacraldehyde (HENRY), 1875, 143.
- Brommetacraldehyde**, action of sodium ethoxide on (GRIMAUD and ADAM), 1881, A., 1029.
- Bromacrylic acid**. See Acrylic acid.
- Bromadipic acid**,  $\beta$ - and  $\gamma$ -*di*-, *tri*- and *tetra*- (LIMPRICHT), 1873, 623.
- di*Brom- $\alpha$ -esculin, and - $\alpha$ -esculetin (LIEBERMANN and KNIETSCH), 1881, A., 108.
- Bromal** (*tribrom-*o*-acetaldehyde*), action of, on benzene (GOLDSCHMIEDT), 1874, 150. action of, on oxy-acids (WALLACH), 1877, i., 59. chloro-, and its alcoholate and hydrate (JACOBSEN and NEUMEISTER), 1882, A., 938.
- Bromalide** (WALLACH and REINCKE), 1878, A., 403.
- Bromalizarin**. See Alizarin, brom-.
- Bromallylene**. See Propargyl bromide.
- Bromallylic alcohol** (HENRY), 1881, A., 567.
- di*Bromallylic alcohol, action of ethylic chloroformate on, in presence of sodium amalgam (KELLY), 1879, A., 305.
- $\alpha$ -Bromallylic bromide. See Propylene,  $\alpha\beta$ -*di*bromo-.
- Bromalurethane** (BISCHOFF), 1874, 891.
- Bromamidoanisole**. See Bromanisidine.
- di*Bromamidoanthraquinone (CLAUS and DIERNFELLNER), 1882, A., 523.
- Bromamidobarbituric acid** (MÜLLER), 1881, A., 801.
- 2:4-Bromamidobenzanilide** (HÜBNER), 1878, A., 142.
- Bromamidobenzene**. See Aniline, brom-.
- Bromamidobenzenesulphonic acid**. See Anilinesulphonic acid, brom-.
- 4:3-Bromamidobenzoic acid** (HÜBNER), 1878, A., 149.
- 3:4:2 or 6-*di*Bromamidobenzoic acid** (GREIFF), 1880, A., 648.
- Bromamidodihydrocarbostyryl**, *mono*-, and *di*- (GABRIEL and ZIMMERMANN), 1879, A., 640.
- 2:6:4-*di*Bromamidophenol** (BÖHMER), 1882, A., 398.
- Bromamidophenylacetic acid**. See Phenylacetic acid.
- 4:3-Bromamido- $\beta$ -phenylpropionic acid** (GABRIEL and ZIMMERMANN), 1881, A., 274.
- 6:2-Bromamidothymol hydrochloride** (ANDRESEN), 1881, A., 591.
- Bromamylene** (FITTIG), 1880, A., 376. action of sulphuric acid on (BOUCHARDAT), 1881, A., 1114.
- Bromanil**. See Quinone, *tetra*bromo-,



- Bromaulic acid**, chloro- (KRAUSE), 1879, A., 462.
- p-Bromanilidoacetic acid**, and its brom-anilide (DENNSTEIT), 1880, A., 634.
- triBromanilidoacetic acid** (SCHWEBEL), 1878, A., 795.
- Bromaniline**. See Aniline.
- Bromanilinedisulphonic acid**. See Anilinedisulphonic acid.
- Bromanilinesulphonic acid**. See Anilinesulphonic acid.
- Bromanisamide** (*bromo-p-methoxybenzamide*) (CRESPI), 1882, A., 192.
- 3-Bromanisic acid**, and its derivatives (BALBIANO), 1882, A., 169; (CRESPI), 1882, A., 191.
- 3:5-diBromanisic acid**, derivatives of (CRESPI), 1882, A., 191.
- Brom-o-anisidine**, 4-*mono*- and 4:6-*di*-, and their salts (STAEDEL and DAMM), 1879, A., 239; 1880, A., 641.
- Brom-p-anisidine**, 2-*mono*- and 2:6-*di*- (STAEDEL and DAMM), 1880, A., 641.
- Bromanthracene**. See Anthracene, brom-.
- diBromanthrapurpurin** (PERKIN), 1873, 432.
- Bromanthraquinone**. See Anthraquinone, brom-.
- Bromapophyllenic acid**, and its salts (V. GERICHTEN), 1882, A., 314.
- diBromapophylline**, and its derivatives (V. GERICHTEN), 1882, A., 1109.
- Bromates**. See under Bromine.
- Bromatropic acid** (FITTIG and WURSTER), 1879, A., 380.
- Bromazo-compounds**. See under Azo.
- Bromel'acea**, micrographical and chemical researches on the textile fibres of certain (SCHLESINGER), 1874, 87.
- Bromethane**. See Ethane.
- $\beta$ -Bromethoxynaphthalene** (KOELLB), 1881, A., 177.
- Brom-o- and -p-ethoxynitrophenol** (WEDDIGE), 1880, A., 316.
- Bromethyl ether**. See Diethyl oxide, bromo-.
- $\alpha$ -Bromethylbenzene** (V. BANDROWSKI), 1875, 62.
- pentaBromethylbenzene** (GUSTAVSON), 1878, A., 973.
- $\omega$ -Bromethylbenzene**, constitution of (RADZISZEWSKI), 1874, 469.
- diBromethylcarbylamine** (TCHERNIAC), 1878, A., 132.
- Bromethylcrotonic acid**, *mono*- and *di*- (FITTIG), 1880, A., 375.
- Bromethylene**. See Vinyl bromide.
- di- and tri-**. See Ethylene.
- Bromethylenic dibromide**. See Ethane, *as-tri*brom-.
- diBromethylenic dibromide**. See Ethane, *as-tetra*brom-.
- Bromethyleugenols**, *mono*- and *tri*- (WASSERMANN), 1876, i., 707.
- diBromethylic acetate** (KESSEL), 1878, A., 133; 1879, A., 137.
- Bromethylic alcohol** (*glycol bromhydrin*) (DEMOLE), 1876, i., 692.
- Bromethylmalonic acid** (CLAUS), 1878, A., 857.
- triBrom- $\alpha$ -ethylnaphthalene** (CARNE-LUTTI), 1881, A., 280.
- Bromethyl- $\alpha$ -naphthol** (MARCHETTI), 1880, A., 260.
- triBromethylphthalimide** (MICHAEL), 1878, A., 70.
- Bromethylquinoline bromide** and its derivatives (BEREND), 1882, A., 530.
- Bromethylsulphuric acid** (BEILSTEIN and WIEGAND), 1882, A., 1179.
- diBromexcretin** (HINTERBERGER), 1873, 920.
- Bromhydrin**, chloro- oxidation of, by chromic acid (THEEGARTEN), 1874, 242.
- Bromic acid**. See under Bromine.
- Bromides**. See under Bromine.
- Bromidrials** (GOLDSCHMIEDT), 1879, A., 167.
- diBromodimidoanthraceneazodibromodimidoanthracene** (CLAUS and DIERNFELLNER), 1882, A., 523.
- tetraBromodimidophenolphthalein** (V. BAEYER and BURKHARDT), 1878, A., 866.
- diBromindigo**, bromindigo-red and bromindophenin (V. BAEYER), 1879, A., 938.
- Bromine in apatite** (KUHLMANN), 1873, 357.
- extraction of, from kelp (GALLOWAY), 1878, A., 1017.
- physical properties of (THORPE), 1880, T., 172.
- electric conductivity of (EXNER), 1882, A., 679.
- specific heat of gaseous (STRECKER), 1881, A., 784.
- specific and atomic volumes of, at its boiling point (RAMSAY), 1881, T., 50.
- specific volume of (THORPE), 1880, T., 384.
- density of, at high temperatures (CRAFTS; MEYER and ZÜBLIN), 1880, A., 432.
- vapour-density of (JAHN), 1882, A., 794.
- solidifying point of (PHILIP), 1880, A., 215.

**Bromine**, affinity of hydrogen for (THOMSEN), 1873, 126, 838.  
 affinity of, for oxygen (BAUMHAUER), 1873, 1096; (THOMSEN), 1873, 1188.  
 displacement of chlorine by, from its compounds with the elements of the 1st, 2nd, 3rd, 4th, and 8th groups of Mendeléeff's natural system (POTILIZIN), 1877, ii., 109.  
 substitution of, in organic compounds (DAMOISEAU), 1876, ii., 617.  
 rate of substitution by, in the acetic acid series (HELL and URECH), 1880, A., 539.  
 replacement of, in the three bromobenzyl bromides (JACKSON), 1876, ii., 512; 1880, A., 161.  
 action of, on acetone (SOKOLOWSKI), 1877, i., 453.  
 action of, on alcohols (HARDY), 1875, 245.  
 action of, on alizarin (PERKIN), 1874, 401.  
 action of, on aromatic substances (MERZ and GESSNER), 1876, ii., 511; (GESSNER), 1877, i., 300.  
 action of, on hot bismuthous oxide (MUIR), 1877, i., 26.  
 action of, on anhydrous chloral (OGLIALORO-TODARO), 1875, 877.  
 action of, on citronellol (WRIGHT), 1874, 323.  
 action of, on isodinaphthyl (SMITH and POYNTING), 1874, 855.  
 action of, on ethylene chlorhydrate (DEMOLE), 1876, ii., 283.  
 action of, on hydrogen dioxide (FAIRLEY), 1877, i., 22.  
 action of, on lactic acid (KLIMENKO), 1876, i., 900.  
 action of, on methylic acetate (STEINER), 1874, 886; 1875, 139.  
 action of, on phenylic thiocyanate (PROSKAUER and SELL), 1877, i., 67.  
 action of, on protocatechuic acid, gallic acid, and tannin (STENHOUSE), 1874, 587; 1875, 7.  
 action of, on silver benzenesulphonate, and *m*-bromobenzenesulphonate (LIMPRICHT), 1877, ii., 459.  
 action of, on sodium ethoxide (SELL and SALZMANN), 1874, 784; (BARTH), 1877, i., 290.  
 action of, on sulphur (HANNAY), 1878, T., 284; 1879, T., 16.  
 elimination of, from bromocitraconic acid (BOURGOIN), 1879, A., 1037.  
 formation of carbon tetrabromide in the manufacture of (HAMILTON), 1881, T., 48.

**Bromine**, presence of cyanogen in (PHIPSON), 1874, 94.  
 chloride, reaction of, with water (BORNEMANN), 1878, A., 11.  
 compounds, heat of solution of (THOMSEN), 1877, ii., 693; 1879, A., 6.  
 hydrobromic acid, and acetic acid, molecular compound of (STEINER), 1874, 566.  
 and hydrochloric acid, compound of acetic acid with (HELL and MÜHLHAUSER), 1879, A., 705.  
 substitution products, formation of (KRAFFT), 1876, i., 71.  
 use of, in analysis (WAGNER), 1876, i., 741; ii., 214; (VULPIUS), 1876, i., 742; (DE KONINCK), 1881, A., 193; (HARDING), 1882, A., 138.  
 use of, in gas analysis (BERTHELOT), 1878, A., 91.  
 testing of, for bromoform (REYMANN), 1875, 1288.  
 detection of, in presence of urea (BIZIO), 1873, 190.  
 estimation of, by Carius's method (LINNEMANN), 1873, 527.  
 estimation of, by ammonium thiocyanate (HERTZ), 1879, A., 973.  
 estimation of, by electrolysis (KINNICUTT), 1882, A., 772.  
 estimation of, in organic compounds (KOPP), 1876, i., 961.  
 estimation of, in organic substances and in vegetable and animal compounds (BRÜGELMANN), 1877, i., 739.  
 chlorine, and iodine, separation and estimation of (GUYARD), 1879, A., 670.  
 See also Halogens.

#### **Hydrobromic acid** (*hydrogen bromide*)

(MERZ and WEITH), 1874, 334;  
 (BERTRAND), 1876, i., 877;  
 (BRUYLANTS), 1880, A., 89;  
 (ETARD and MOISSAN), 1881, A., 18; (HARDING), 1882, A., 138.  
 vapour density of (CALM), 1879, A., 579.  
 etherification of (VILLIERS), 1881, A., 32.  
 action of phosphorus on (DAMOISEAU), 1881, A., 222.  
 action of, on selenious anhydride (DITTE), 1876, ii., 476.  
 absorption of, by acetic acid (HELL and MÜHLHAUSER), 1879, A., 705.  
 addition of, by means of a solution of hydrobromic acid in glacial acetic acid (ANSCHÜTZ and KINNICUTT), 1878, A., 879.

- Hydrobromic acid** (*hydrogen bromide*), new compounds of, with ammonia (TROOST), 1881, A., 972.  
acetic acid and bromine, molecular compound of (STEINER), 1874, 566.  
compound of, with tellurous oxide (DITTE), 1876, ii., 606.
- Bromides**, preparation of (RICE), 1873, 1104.  
the influence of different, on collodion emulsion (WARNERKE), 1876, ii., 232.  
acid, formation of, by the addition of oxygen to brominated olefines (DEMOLE), 1878, A., 401.  
heat of decomposition of (LUGININ), 1875, 728.  
anhydrous metallic, action of chlorine on (POTILIZIN), 1879, A., 770.  
behaviour of, to the guaiacum-copper test for prussic acid (SCHÄR), 1874, 922.
- Hypobromous acid**, and allyl derivatives, additive derivatives of (HENRY), 1874, 978.
- Hypobromites**, alkaline, action of, on ammonium salts, urea, and oxamide (FOSTER), 1878, T., 470; 1879, T., 122.  
actions of, on some nitrogen-compounds (FENTON), 1879, T., 12.
- Bromic acid**, heat of formation of (THOMSEN), 1873, 1189.
- Bromates**, action of oxalic acid on (GUYARD), 1879, A., 593.
- Perbromic acid** (MACIVOR), 1876, i., 677.  
preparation of (WOLFRAM), 1880, A., 91.
- Perbromates** (MUIR), 1874, 324; 1876, ii., 469.
- Bromiodiacrylic acid**. See Acrylic acid.
- Bromiodethane**. See Ethane.
- 3-Bromiodethylene** (*acetylenic bromiodide*) (PLIMPTON), 1882, T., 392.
- Bromiodo- and bromidonitro-benzenes**, isomeric, preparation and properties of (KÖRNER), 1876, i., 215.
- Bromidonitrotoluene**. See Toluene.
- Bromiodopropane** (*propylenic bromiodide*) (SIMPSON), 1874, 564.
- Bromidotoluene**. See Toluene, bromiodo-.
- 3:5:4-di-Bromiodo-2-toluidine** (WROBLEWSKI), 1878, A., 978.
- Bromisatin** (v. BAeyer), 1879, A., 938.
- p-Bromobenzaldehyde** (JACKSON and WHITE), 1878, A., 729.
- 4-Bromobenzaldehydesulphinic acid** (BÖTTINGER), 1877, i., 468; 1878, A., 730.
- p-Bromobenzanilide** (HÜBNER), 1878, A., 149.
- 2:4-di-Bromobenzanilide** (HÜBNER), 1878, A., 142.
- Bromobenzene**. See Benzene.
- Bromobenzeneazo-**. See under Azo-.
- Bromobenzenedisulphonic acid**. See Benzenedisulphonic acid.
- Bromobenzenesulphonic acid**. See Benzenesulphonic acid.
- di-Bromobenzidine** (GABRIEL), 1877, i., 307.
- tetra-Bromobenzidine** (CLAUS and RISLER), 1881, A., 605.
- Bromobenzoic acid**. See Benzoic acid.
- p-Bromobenzoic chloride** (HÜBNER), 1878, A., 149.
- m-Bromobenzophenone** (KOLLARITS, and MERZ), 1873, 1036.
- p-Bromobenzylamine** (JACKSON and LOWERY), 1882, A., 170.
- o-Bromobenzyl-compounds** (JACKSON and WHITE), 1880, A., 879.
- p-Bromobenzyl-compounds** (JACKSON and LOWERY), 1878, A., 64; 1882, A., 170.
- p-Bromobenzylcurcumin** (JACKSON and MENKE), 1882, A., 1103.
- p-Bromobenzyl alcohol** (JACKSON and LOWERY), 1878, A., 64; 1882, A., 170.
- Bromobenzyl bromide**. See Benzyl bromide.
- Bromo-p-benzylphenolsulphonic acid** and its salts (RENNIE), 1882, T., 34, 220.
- Bromobetorcinol**, *di-* and *tetra-* (STENHOUSE and GROVES), 1880, T., 400.
- Bromobrazilin** (LIEBERMANN and BURG), 1877, ii., 194.
- Bromobutane**. See Butylic bromide.
- Bromoisobutyramide** (v. HOFMANN), 1882, A., 1052.
- Bromobutyric acid**. See Butyric acid.
- Bromobutyric bromide**. See Butyric bromide.
- Bromocaffeine** (FISCHER), 1881, A., 614.
- Bromocamphocarboxylic acid** (DOS SANTOS E SILVA), 1874, 70.
- Bromocamphor**. See Camphor.
- Bromocaproic acid**. See Hexoic acid.
- Bromochloral** and its alcoholate and hydrate (JACOBSEN and NEUMEISTER), 1882, A., 938.
- Bromo-chloralide** and -chloroform (JACOBSEN and NEUMEISTER), 1882, A., 938.
- Bromochromammonium salts** (JÖRGENSEN), 1882, A., 468.

- di*Bromochrysene (SCHMIDT), 1874, 987.
- di*Bromochrysin (PICCARD), 1873, 1236.
- di*Bromochrysoquinone (ADLER), 1880, A., 263.
- di*Bromocinchonine (HESSE), 1878, A., 436.
- Bromocinchonines, transformation of the three, into the corresponding oxy-bases (KOPP), 1877, i., 323.
- Bromocinnamic acids,  $\alpha$ - and  $\beta$ - (BARISCH), 1880, A., 43.  
(*phenylbromacrylic acids*) action of concentrated sulphuric acid on (LEUCKART), 1882, A., 615.
- Bromocitraconic acid (BOURGOIN), 1879, A., 457.  
elimination of bromine from (BOURGOIN), 1879, A., 1037.  
an acid,  $C_5H_4O_4$ , from (BOURGOIN), 1879, A., 1037.
- Bromocitraconic anhydride (FITTIG and KRUSEMARK), 1881, A., 416.
- Bromocobaltamine salts (JÖRGENSEN), 1879, A., 598.
- Bromocodeine, and the action of phosphorus *pentachloride* on (V. GERICHTEN), 1882, A., 312.
- Bromo-compounds, conversion of amido-compounds into (V. RICHTER), 1876, i., 390.
- Bromocotarnine and its derivatives and chemical reactions (WRIGHT), 1877, ii., 531.
- tri*Bromocotoin (V. JOEST and HESSE), 1880, A., 326.
- m*-Bromo-*o*-cresol (WROBLEWSKI), 1874, 52.
- m*-Bromo-*m*-cresol (NEVILLE and WINTHER), 1882, T., 421.
- tetra*Bromo-*p*-cresol (BAUMANN and BRIEGER), 1879, A., 789.
- di*Bromo-*o*-cresolphthalein (FRAUDE), 1879, A., 635.
- Bromocresolsulphonic acid. See Cresolsulphonic acid.
- Bromocrotonic acid,  $\alpha$ - and  $\beta$ - (MICHAEL and NORTON), 1881, A., 798.
- p*-Bromocumene (JACOBSEN), 1879, A., 624.
- Bromo- $\psi$ -cumenol, *mono*- and *di*- (REUTER), 1878, A., 413.
- 3-Bromo-*p*-cuminic acid (V. GERICHTEN), 1879, A., 230.
- Bromocyanocamphor (HALLER), 1879, A., 329.
- Bromocyanonaphthalene [m.p. 147° and 149°] (HAUSMANN), 1877, i., 318.
- Bromocymenes. See Cymene.
- Bromocymenesulphonic acids. See Cymenesulphonic acids.
- Bromocystin (BAUMANN), 1882, A., 1282.
- di*Bromodecoic acid (*dibromocapric acid*) (HELL and SCHOOP), 1879, A., 521.
- Bromodiacytlæsculetin, *di*- and *tri*- (LIEBERMANN and KNIETSCH), 1881, A., 108.
- Bromodiacytlalazarin (PERKIN), 1874, 402.
- tri*Bromodiacytl-*orcino*land-*resorcinol* (CLAASSEN), 1878, A., 867.
- csotetra*Bromodiacytlquercetin (LIEBERMANN and HANBURGER), 1879, A., 946.
- tri*Bromodialdehyde (SCHÜTZENBERGER), 1873, 487.
- Bromodiallylene (HENRY), 1881, A., 565.
- di*Bromodiallylic *tetra*bromide. See Hexane, *hexabromo*-.
- di*Bromodiallylic oxide (HENRY), 1873, 1123.
- tetra*Bromodiallyloxalic acid (SAYTZEFF), 1877, ii., 883.
- Bromodiazobenzene nitrate, action of potassium cyanide on (GABRIEL), 1880, A., 41.
- Bromodiazophenetol nitrate, *di*- and *tri*- (MÖHLAU and OEHMICHEN), 1882, A., 396.
- Bromodibenzoylhydrocotone, *di*- and *tri*- (V. JOEST and HESSE), 1880, A., 327.
- di*-*p*-Bromodibenzylamine (JACKSON and LOWERY), 1882, A., 170.
- Bromodichroic acid (WEIDEL and GRUBER), 1877, ii., 778.
- "Bromodichromazin" (WEIDEL and GRUBER), 1877, ii., 778.
- Bromodiethyl oxide. See Diethylic oxide.
- di*Bromodiethyldihydroxydiphenylsulphone (ANNAHEIM), 1874, 797.
- p*-Bromodihydrocarbostyryl (GABRIEL and ZIMMERMANN), 1881, A., 274.
- 2:4-*di*Bromo-1:3-dihydroxyanthraquinone (SCHUNCK and ROEMER), 1878, T., 424.
- Bromo-2:4-dihydroxybenzoic acids, *mono*- and *di*-, and their salts (ZEHESTER), 1882, A., 193.
- tetra*Bromodi-*p*-hydroxybenzophenone (V. BAEYER and BURKHARDT), 1880, A., 657.
- tetra*Bromodi-*p*-hydroxydiphenylmethane (BECK), 1878, A., 421; 1879, A., 325.
- di*Bromodihydroxydiphenylsulphone (ANNAHEIM), 1876, ii., 296.
- tetra*Bromodihydroxydiphenylsulphone (ANNAHEIM), 1874, 796.



- di*Bromodihydroxydipropylmalonic acid, dilactone of (HJELT), 1882, A., 946.
- a-di*Bromo-1:3-dimethoxybenzene (HÖNIG), 1878, A., 727; (TIEMANN and PARRISIUS), 1881, A., 270.
- 2:5(?)*-di*Bromo-1:4-dimethoxybenzene (HABERMANN), 1878, A., 728.
- Bromodimethylaniline. See Dimethylaniline.
- Bromodimethylanilinephthalein (FISCHER), 1878, A., 51.
- di*Bromodimethylanthraccene (VAN DORP), 1874, 63.
- di*Bromodimethyldihydroxydiphenylsulphone (ANNAHEIM), 1874, 796.
- tri*Bromodimethylnaphthalene (GIOVANNONZI), 1882, A., 854.
- di*Bromodimethylorcinol (TIEMANN and STRENG), 1882, A., 51.
- di*Bromodimethylpyrocatechol (*dibromoveratrol*) (MATSMOTO), 1878, A., 500.
- Bromodimethyl-*o*-toluidine (MICHLER and SAMPAIO), 1882, A., 177.
- Bromodimethyl-*m*-toluidine (WURSTER and RIEDEL), 1880, A., 109.
- tetra*Bromo-*p*-diphenol and its preparation and oxidation (MAGATTI), 1880, A., 643.
- tetra*Bromodiphenolcresolmethane (*tetrabromoleucorosolic acid*) (GRAEBE and CARO), 1876, i., 590.
- o*-Bromodiphenyl (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 912.
- Bromodiphenyl, *p*-mono- and *p-di*- (SCHULTZ), 1875, 148.
- di*Bromo-*as*-diphenylacetamidine (DENNSTEDT), 1880, A., 634.
- di*Bromodiphenylamine (LELLMANN), 1882, A., 1060.
- hexa*Bromodiphenylamine (GNEHM), 1876, i., 83.
- di*Bromodiphenylbutanedicarboxylic acid (GABRIEL and MICHAEL), 1878, A., 428.
- di-p*-Bromodiphenylbiuret (DENNSTEDT), 1880, A., 633.
- di-p*-Bromo-*s*-diphenylcarbamide (SARAUW), 1882, A., 609.
- di*Bromodiphenyltrichlor-*ε*-thane and -ethylene (ZEIDLER), 1875, 148.
- di*Bromodiphenyleneglycollic acid (FRIEDLÄNDER), 1877, ii., 493.
- di*Bromo-*γ*-diphenylenemethane (CARNELLEY), 1880, T., 710.
- ω-tri*Bromo-*as*-diphenylethane and *ω-di*Bromo-*as*-diphenylethylene (GOLDSCHMIEDT), 1874, 150.
- di*Bromo-*s*-diphenylhydrazine (WERIGO), 1873, 384; (GABRIEL), 1877, i., 307.
- Bromo-*s*-diphenylhydrazinedi-*m*-sulphonic acids, *di*- and *tetra*-, and their salts, and diazo-compounds (JORDAN), 1880, A., 808.
- p-di*Bromodiphenylic sulphide (KRAFFT), 1875, 153.
- ω*-Bromodiphenylmethane and the action of water on (FRIEDEL and BALSCHN), 1880, A., 558.
- action of ammonia on (FRIEDEL and BALSCHN), 1881, A., 279.
- ω-di*Bromodiphenylmethane (FRIEDEL and BALSCHN), 1880, A., 558.
- tri*Bromodiphenylmethylaniline (GNEHM), 1876, i., 83.
- p*-Bromodiphenylthiocarbamide (DENNSTEDT), 1880, A., 634.
- Bromodiphtalyl (ADOR), 1873, 68.
- Bromodipropylresorcinol (KARLOF), 1881, A., 269.
- tetra*Bromodiresorcinol (BENEDIKT), 1879, A., 55, 465.
- tetra*Bromodi-*p*-tolylamine (LEHNE), 1881, A., 41.
- di*Bromoditolyltrichlorethane (FISCHER), 1875, 154.
- di*Bromoditolylmethane (WEILER), 1875, 151.
- Bromo*isodurene* (BIELEFELDT), 1880, A., 38.
- tri*Bromoflavopurpurin (SCHUNCK and ROEMER), 1878, A., 322.
- di*Bromofluoranthene (GOLDSCHMIEDT), 1878, A., 155; (FITTIG and GEBHARD), 1879, A., 166.
- tri*Bromofluoranthene (*idryl*) (GOLDSCHMIEDT), 1881, A., 283.
- a-di*Bromofluorene (BARBIER), 1873, 1226; 1877, i., 70.
- β-di*Bromofluorene (FITTIG and SCHMITZ), 1879, A., 164.
- tetra*Bromofluorescein. See Eosin.
- Bromofluoresceincarboxylic acid, *di*- and *tetra*- (SCHREDER), 1879, A., 56.
- Bromoform (*tribromomethane*) (SCHMIDT), 1877, ii., 293; (BENEDIKT), 1878, A., 499; (BOURGOIN), 1881, A., 155.
- formation of (RICE), 1877, ii., 423.
- preparation of (DAMOISEAU), 1881, A., 238.
- physical properties of (THORPE), 1880, T., 201.
- action of alcoholic potash on (LONG), 1879, A., 126.
- action of the copper-zinc couple on (GLADSTONE and TRIBE), 1875, 510.
- formation of carbon *tetrabromide* from (HABERMANN), 1873, 865, 1013.

- Bromoform** (*tribromomethane*), testing of bromine for (REYMAN), 1875, 1288.  
chloro- (JACOBSEN and NEUMEISTER), 1882, A., 938.
- Bromofornamide** (v. HOFMANN), 1882, A., 1052.
- p-Bromofornanilide** (DENNSTEDT), 1880, A., 634.
- Bromofumaric acid** (*isobromomaleic acid*) (ANSCHÜTZ), 1878, A., 137.
- diBromofumaric acid**, formation of, by the action of bromine on mucobromic acid (LIMPRICHT), 1873, 625.
- Bromofumarimide** (KISIELSKI), 1878, A., 43.
- Bromofuril**, *mono-* and *di-* (FISCHER), 1880, A. 798; 1882, A., 499.
- diBromogallein** (v. BUCHKA), 1882, A., 61.
- triBromoglyoxaline** (WYSS), 1878, A., 24.
- diBromohexamethoxydiphenyl** (EWALD), 1879, A., 253.
- Bromohexane**, *di-*, *hexa-* and *octo-*. See Hexane, bromo-.
- Bromohexenoic acid** (*bromohydrosorbic acid*) (FITTIG), 1880, A., 377.
- diBromohexenoic acid** (KACHEL and FITTIG), 1874, 44.
- Bromo-n-hexoic acid** (*bromocaproic acid*). See *n-Hexoic acid*.
- octoBromohexonene** (MERZ and WEITH), 1877, ii., 867.
- Bromohexylene**. See Hexylene.
- Bromohomofluorescein**, *tetra-*, and *hexa-* (SCHWARZ), 1880, A., 552.
- Bromohydrocœrulignone**, *di-* and *tetra-* (HAYDUCK), 1876, ii., 516.
- Bromohydrocotarnine**, preparation of (WRIGHT), 1877, ii., 529.
- triBromohydrocotarnine hydrobromide**, preparation and chemical reactions of (WRIGHT), 1877, ii., 532.
- Bromohydrocotoin**, *mono-* and *di-* (v. JOEST and HESSE), 1877, ii., 202; 1880, A., 328.
- tetraBromohydrocyanosolic acid** (GRAEBE and CARO), 1876, i., 591.
- diBromohydromalonylcarbamide** (GRIMAU), 1876, i., 70.
- Bromohydromuonic acid** (LIMPRICHT), 1873, 622.
- diBromohydropiperic acid** (FITTIG and MIELCK), 1874, 900.
- diBromohydroxyanthraquinone** (v. BAAYER), 1877, i., 308; 1880, A., 658.
- 3-Bromo-p-hydroxybenzaldehyde** (HERZFELD), 1878, A., 423.
- tetraBromo-o- and -p-hydroxybenzene-o- and -p-azophenol** (WESELSKY and BENEDIKT), 1878, A., 498; 1879, A., 718.
- Bromohydroxy-β-butyric acid** (ERLENMEYER and MÜLLER), 1882, A., 598.
- Bromohydroxydiphenyl oxide** (*bromophenylphenol ether*) (FÖHMER), 1882, A., 398.
- 4-Bromo-3-hydroxy-2-methylanthraquinone** (FRAUDE), 1879, A., 635.
- 3-Bromo-2-hydroxy-α-naphthaquinone** (DIEHL and MERZ), 1878, A., 322, 736.
- Bromohydroxynaphthaquinonesulphonic acid**, potassium salt of (ARMSTRONG and GRAHAM), 1881, T., 138.
- Bromohydroxyoctoic acid**, *mono-* and *tri-*, lactone of (HJELT), 1882, A., 946.
- diBromo-α-hydroxy-α-phenylpropionic acid** (BÖTTINGER), 1881, A., 814.
- Bromohydroxypiperide**, *mono-* and *di-*, and **tetraBromohydroxypiperhydraonic acid** (FITTIG and MIELCK), 1874, 898.
- di-β-Bromo-α-hydroxy-α-tolylpropionic acid** (*dibromomethyltololactic acid*) (BÖTTINGER), 1881, A., 1036.
- β-Bromolactic acid** (MELIKOFF), 1880, A., 800.
- triBromolactic acid** (WALLACH and REINCKE), 1878, A., 403.
- hexaBromolactomaluryl** (GRIMAU), 1876, i., 69.
- Bromoleucotin**, *di-* and *tri-* (v. JOEST and HESSE), 1880, A., 326.
- Bromomaleic acid** (PETRI), 1879, A., 373; (v. BANDROWSKI), 1879, A., 524.
- isoBromomaleic acid**. See Bromofumaric acid.
- Bromomaleic anhydride** (ANSCHÜTZ), 1878, A., 136.
- Bromomalonic acid** (PINNER), 1876, i., 65; (PETRIEFF), 1878, A., 490.
- diBromomalonic acid** (PETRIEFF), 1874, 787.
- Bromomesitol**, *mono-* and *di-* (JACOBSEN), 1879, A., 529.
- Bromomesitylenic acids**, α- and β-, and their salts (SCHMITZ), 1879, A., 156.
- diBromomethane**. See Methylenic bromide.
- triBromomethane**. See Bromoform.
- tetraBromomethane**. See Carbon tetrabromide.
- diBromo-oβ-methoxyphenyl-angelic and -crotonic acids**, and their dibromides (PERKIN), 1881, T., 434.

*tetra*Bromo-*o*-methoxyphenyl-butyric and -valeric acids (PERKIN), 1881, T., 434.

*di*Bromo-3-methoxy-*p*-toluic acid (PATERNO and CANZONERI), 1880, A., 884.

*hepta*Bromomethyl ethyl ketone (DEMOLE), 1879, A., 220.

Bromomethylacrylic acid, action of potash on (FRIEDRICH), 1881, A., 413.

metallic salts of (MORAWSKI), 1878, A., 213.

*iso*Bromomethylacrylic acid (FITTIG and KRUSEMARK), 1881, A., 416.

*p*-Bromomethylaniline, and its nitrosamine (WURSTER and SCHIEBE), 1880, A., 107.

*di*Bromo-2-methylantracene (FISCHER), 1875, 155.

*tetra*Bromomethylaurin (ZULKOWSKI), 1882, A., 1291.

Bromomethyl-*o*-coumaric acid, and its decomposition by alkalis (PERKIN), 1881, T., 423.

Bromomethylcoumarin,  $\beta$ -*mono*- and  $\beta$ -*di*- (PERKIN), 1875, 12.

Bromomethylenephthalide (GABRIEL and MICHAEL), 1878, A., 734.

Bromomethyleugenol and its *di*bromide (WASSERMANN), 1879, A., 790.

*di*Bromomethylresorcinol (*dibromohydroxymethoxymethylbenzene*) (TIEMANN and STENG), 1882, A., 52.

*tri*Bromomethylresorcinol (*tribromohydroxymethoxybenzene*) (TIEMANN and PARRISIUS), 1881, A., 270.

Bromomethylsuccinic acid. See Methylsuccinic acid.

*citra*Bromomethylsuccinic anhydride (BOURGOIS), 1878, A., 30.

*itadi*Bromomethylsuccinic anhydride (PETRI), 1881, A., 1032.

Bromomethyltarconic acid, and its salts (V. GERICHTEN), 1882, A., 869.

6-Bromomethylthymol (PATERNO and CANZONERI), 1880, A., 884.

Bromomucic acid. See Mucobromic acid.

Bromomucobromic acid (JACKSON and HILL), 1879, A., 224.

Bromonaphthalene. See Naphthalene.

1-Bromonaphthalene-4-sulphonic acid (MELDOLA), 1880, A., 260.

Bromonaphthalic acid. See 3-Bromo-2-hydroxy- $\alpha$ -naphthaquinone.

2:3-*di*Bromo- $\alpha$ -naphthaquinone (DIEHL and MERZ), 1878, A., 736.

Bromo- $\alpha$ - and  $\beta$ -naphthoic acid, *mono*-, *tri*- and *tetra*- (HAUSAMANN), 1877, i., 318.

Bromonaphthol. See Naphthol.

Bromo- $\beta$ -naphtholsulphonic acid, *mono*- and *di*-, calcium and potassium salts of (ARMSTRONG and GRAHAM), 1881, T., 137.

2:1-*di*Bromo- $\alpha$ -naphthylamine (MELDOLA), 1880, A., 260.

1-Bromo- $\beta$ -naphthylamine (COSINER), 1881, A., 606.

*di*Bromonicotine (LAIBLIN), 1880, A., 897.

*tetra*Bromonicotine (CAHOIRS and ETARD), 1880, A., 815; (GRIMAU), 1882, A., 1215.

Bromonitracetanilide, 4:2-*mono*-, 4:6:2-*di*- and 2:4:6:3-*tri*- (REMMERS), 1874, 696.

$\omega$ -Bromo-*m*-nitracetophenone (HUNNIUS), 1878, A., 147.

Bromonitraniline. See Aniline.

Bromonitranisole. See Anisole.

*di*Bromonitramidoanthraquinone (CLAUS and DIERNFELNER), 1882, A., 524.

Bromonitranthraquinone. See Anthraquinone.

*p*-*di*Bromonitrazobenzene (WERIGO), 1873, 384.

Bromonitroethane. See Ethane.

*di*Bromonitroethylene (MERZ and ZETTER), 1880, A., 114.

*di*Bromodinitroimidophenolphthalein (V. BAEYER and BURKHARDT), 1878, A., 866.

Bromo-*o*-nitrobenzaloxime (GABRIEL and MEYER), 1881, A., 730.

Bromonitrobenzanilide. See Benzanilide.

Bromonitrobenzene. See Benzene.

Bromonitrobenzenesulphonic acid. See Benzenesulphonic acid.

Bromonitrobenzoic acid. See Benzoic acid.

Bromonitro-*p*-benzylphenol, and the action of nitric acid on (RENNIE), 1882, T., 223.

Bromonitrobutane. See Butane.

Bromonitrocampaor (SCHIFF), 1880, A., 891; 1881, A., 438.

*tri*Bromodinitrochrysene (ADLER), 1880, A., 263.

Bromo-*p*-nitrocinnamic acid,  $\alpha$ - and  $\beta$ - (MÜLLER), 1882, A., 842.

*di*Bromonitrocinnamic acid (V. BAEYER), 1881, A., 274.

*di*Bromonitro-*p*-cresol (KNECHT), 1882, A., 969.

Bromonitrocymenes. See Cymene.

2:4:6-*tri*Bromo-3-nitrodiaetanilide (REMMERS), 1874, 696.

*p*-Bromo-*p*-nitrodiiphenyl (SCHULTZ), 1874, 468; 1875, 149.

- iso*Bromonitrodiphenyl (SCHULTZ), 1875, 149; SCHULTZ, SCHMIDT and STRASSER), 1881, A., 911.
- p*-Bromo-2:4-dinitrodiphenylamine (*p*-bromophenyl-2:4-dinitraniline) (WILLGERODT), 1878, A., 570.
- tri*Bromodinitrodiphenylamine (GNEHM and WYSS), 1878, A., 53.
- di*Bromotetranitrodiphenylamine (GNEHM), 1876, i., 83.
- di*Bromodinitrodiphenyltrichlorethane (ZEIDLER), 1875, 148.
- Bromodinitrodiphenylmethylaniline (LEYMANN), 1882, A., 1057.
- 4:6:2-*di*Bromonitrohydroxyethoxybenzene (WESELSKY and BENEDIKT), 1881, A., 727.
- di*Bromonitromethane and *tribromo*-nitromethane (*bromopierin*) (TCHERNIAC), 1876 i., 901.
- di*Bromodinitromethane and its alkali salts (LOSANITSCH), 1882, A., 955.
- Bromonitronaphthalene. See Naphthalene.
- 4:2-Bromonitro- $\alpha$ -naphthol (BIEDERMANN and REMMERS), 1874, 802.
- 4:2-Bromonitro- $\alpha$ -naphthylamine (LIEBERMANN), 1877, i., 606.
- Bromonitrophenanthrene (ANSCHÜTZ), 1878, A., 984.
- $\omega$ -Bromo-*o*- and -*p*-nitrophenetol (WEDDIGE), 1880, A., 316.
- Bromonitrophenetols, 4:2- and 2:4- (HALLOCK), 1881, A., 595.
- Bromonitrophenols. See Phenol.
- 6:4-Bromonitrophenol-2-sulphonic acid (POST and BRACKENBUSH), 1874, 476.
- Bromonitrophenolsulphonic acids (ARMSTRONG and BROWN), 1874, 1164.
- Bromonitrophenylacetic acid. See Phenylacetic acid.
- 5:2-Bromonitro-*m*- and -*p*-phenylenediamines (KÖRNER), 1876, i., 225.
- p*-Bromo-*o*- and -*m*-nitro- $\beta$ -phenylpropionic acid (GABRIEL and ZIMMERMANN), 1881, A., 274.
- $\alpha\beta$ -*di*Bromo-*p*-nitro- $\beta$ -phenylpropionic acid and its salts (DREWSSEN), 1882, A., 846.
- Bromonitropropane,  $\alpha$ - and  $\beta$ -*mono*- and *di*- (MEYER and TCHERNIAC), 1876, i., 901.
- tri*Bromodinitropropionic acid (BENEDIKT), 1877, ii., 193.
- di*Bromonitrorescinol (WESELSKY), 1874, 694.
- 4:6:2-*di*Bromonitroresorcinol (WESELSKY and BENEDIKT), 1881, A., 727.
- Bromonitrotoluene. See Toluene.
- Bromonitrotoluenesulphonic acid. See Toluenesulphonic acid.
- Bromonitrotoluidine. See Toluidine.
- Bromopentane. See Pentane.
- Bromophenanthrene. See Phenanthrene.
- Bromophenanthrenesulphonic acid, salts of (ANSCHÜTZ and v. SIEMENSKI), 1880, A., 891.
- Bromophenol. See Phenol.
- Bromophenolphthalein. See Phenolphthalein.
- Bromophenolphthalidein, *mono*- and *tetra*-, and their derivatives, *tetra*-bromophenol-phthalidin and -phthalin (v. BAEYER), 1880, A., 655.
- tetra*Bromophenolphthalidin, action of ammonia on (v. BAEYER and BURKHARDT), 1880, A., 657.
- hexa*Bromophenoquinone (BENEDIKT), 1880, A., 246.
- Bromophenoxyacetic acid (FRITZSCHE), 1880, A., 320.
- Bromophenoxypropionic acid (SAARBACH), 1879, A., 642; 1880, A., 393.
- p*-Bromophenyl mercaptan (BAUMANN and PREUSSE), 1879, A., 803; 1882, A., 757.
- Bromophenylacetic acid. See Phenylacetic acid.
- $\omega$ -Bromophenylacetonitrile (REIMER), 1882, A., 170.
- Bromo- $\beta$ -phenylbutylene and its *di*-bromide (PERKIN), 1879, T., 139.
- p*-Bromophenylcarbylamine *dichloride* (DENNSTEDT), 1880, A., 634.
- Bromophenylcystein (BAUMANN and PREUSSE), 1882, A., 756.
- Bromophenylenacetamidine (REMMERS), 1874, 696.
- Bromophenylenediaminesulphonic acid, *mono*- and *di*- (LIMPRICHT), 1878, A., 497.
- di*Bromophenylenedioxyacetic acid (GABRIEL), 1880, A., 33.
- di*Bromophenylene- $\alpha$ -naphthylene oxide (v. ARX), 1881, A., 282.
- Bromophenylic isocyanate, *p*- and *bis*- (DENNSTEDT), 1880, A., 633.
- $\alpha$ -Bromophenyl- $\beta$ -lactic acid (ERLENMEYER), 1880, A., 472.
- Bromophenylmercaptopuric acid. See Phenylmercaptopuric acid.
- Bromophenyl- $\alpha$ - and - $\beta$ -naphthylamine, *di*- and *tri*- (STREIFF), 1881, A., 176.
- di*Bromophenyloxethylenecarbamide. See *p*-Bromanilidoacetic acid, bromanilide of.
- p*-Bromophenylphthalimide (GABRIEL), 1879, A., 323.
- Bromo- $\alpha$ - and - $\beta$ -phenylpropionic acid. See  $\alpha$ - and  $\beta$ -Phenylpropionic acid.



- Bromophenylthio-carbamide and -carbimide (DENNSTEDT), 1880, A., 633.
- Bromophenylthiourethane (*ethyl p-bromophenylthiocarbamate*) (DENNSTEDT), 1880, A., 634.
- tri*Bromophloroglucinol, action of nitric acid on (BENEDIKT), 1877, ii., 193.
- 3-Bromophthalic anhydride (SMITH), 1879, T., 792.
- di*Bromopicene (BURG), 1881, A., 179.
- Bromopictin. See Methane, *tribromo*-nitro-.
- tetra*Bromopiperhydronic acid and *di*-bromopiperide (FITTING and MIELCK), 1874, 897.
- Bromoplatinites. See Platinosobromides under Platinum.
- $\alpha\beta$ -*di*Bromopropaldehyde (GRIMAU and ADAM), 1881, A., 1029.
- Bromopropane. See Propylid bromide.
- di*Bromopropane. See Propane.
- Bromopropionic acid (JACKSON and HILL), 1879, A., 225; (HILL), 1879, A., 616.
- Bromopropionic acid. See Propionic acid.
- $\alpha$ -Bromopropionic bromide, action of zinc methyl on (KASCHIRSKY), 1879, A., 46; 1882, A., 36.
- Bromopropylene. See Propylene.
- s-di*Bromoisopropylid alcohol. See Glyceryl dibromhydrin.
- Bromopurpurin (SCHUNCK and ROEMER), 1877, i., 673; ii., 625; (LIEBERMANN and PLATH), 1878, A., 78; (ANON.), 1878, A., 737.
- 2,4-*di*Bromopurpuroxanthin (SCHUNCK and ROEMER), 1878, T., 424.
- Bromopyridine. See Pyridine.
- tera*Bromopyrocatechol and *tri*bromopyrogallol, action of bromine on, in presence of water (STENHOUSE), 1874, 586; 1875, 1.
- Bromopyrocoll, *mono*- and *di*- (CIAMICIAN and DANESI), 1882, A., 234.
- tri*Bromopyroguaiacol (WIESER), 1881, A., 813.
- Bromopyromucic acid. See Pyromucic acid.
- Bromopyrotartaric acid. See Methylsuccinic acid, bromo-.
- di*Bromopyroxanthin and its *tetrabromide* (HILL), 1878, A., 517; 1882, A., 307.
- Bromopyruvic acid, *di*- and *bis*- (GRIMAU), 1874, 887.
- di*Bromopyruvic acid, action of benzene on (BÖTTINGER), 1881, A., 814.
- di*Bromoquercetin and *tetrabromo*-quercetin (LIEBERMANN and HAMBURGER), 1879, A., 945.
- Bromoquinol. See Quinol.
- Bromoquinoline. See Quinoline.
- penta*Bromoquinolphthalein (EKSTRAND), 1878, A., 676.
- Bromoquinone. See Quinone.
- penta*Bromorcinol (LIEBERMANN and DITTLER), 1874, 62; (CLAASSEN), 1878, A., 867.
- tri*Bromoresoquinone, reduction of (BENEDIKT), 1879, A., 55.
- Bromoresorcinol. See Resorcinol.
- tetra*Bromoresorcinolbenzein (DOEBNER), 1880, A., 644.
- penta*Bromoresorcinoloxalein (CLAUS), 1882, A., 399.
- 3:5-*di*Bromoresorcinolphthalein (v. BAeyer), 1877, i., 204.
- Bromoretene, *di*- and *tetra*- (EKSTRAND), 1877, ii., 497.
- di*Bromorhamnetin (LIEBERMANN and HOERMANN), 1879, A., 272.
- tetra*Bromorosolic acid (GRAEBE and CARO), 1876, i., 590.
- Bromo-*p*-rosolic acid, hydrobromide of (ZULKOWSKI), 1882, A., 1290.
- tetra*Bromo-*p*-rosolic acid (DALE and SCHORLEMMER), 1879, T., 152.
- Bromorosquinone (v. BAeyer and SCHRAUBE), 1878, A., 869.
- Bromosalicylanilide (HAARMANN), 1873, 907.
- 3:5-*di*Bromosalicylic acid (HÜBNER), 1878, A., 148.
- Bromo-*m*-santonin, *mono*- and *di*- (CANIZZARO and CARNELUTTI), 1879, A., 330; 1881, A., 285.
- Bromosilicodene (PAPE), 1882, A., 154.
- Bromostyrene. See Styrene.
- Bromosuberic acid, *mono*- and *di*- (GANTTER and HELL), 1882, A., 716.
- Bromosuccinic acid. See Succinic acid.
- Bromosuccinic anhydride (ANSCHÜTZ and BENNETT), 1882, A., 828.
- isodi*Bromosuccinic anhydride (PICTET), 1881, A., 253.
- tetra*Bromosuccinylfluorescein (NENCKI and SIEBER), 1881, A., 592.
- p*-Bromo- $\alpha$ -sulphamidobenzoic acid (BÖTTINGER), 1878, A., 730.
- di*Bromosulphobenzeneazodihydroxynaphthalene (GRIESS), 1879, A., 317.
- di*Bromosulphobenzeneazo- $\beta$ -naphthol (STEBBINS), 1880, A., 881.
- Bromosulphobenzoic acid. See Sulphobenzoic acid.
- Bromosulphonic acid, attempts to prepare (CLAUSNIZER), 1879, A., 354.
- p*-Bromo-*m*-sulpho- $\beta$ -phenylpropionic acid and its salts (GÖRING), 1878, A., 318.

- Bromotarconine.** See Tarconine under Alkaloids.
- Bromoterephthalic acid and chloride** (FISCHL), 1879, A., 639.
- 2:5-diBromoterephthalic acid**, and its salts (CLAUS and WIMMEL), 1880, A., 632.
- β*-diBromotetrahydroquinoline** and its salts (CLAUS and ISTEI), 1882, A., 1110.
- Bromothiocarbamide** (CLAUS), 1876, i., 572.
- p*-Bromothioformanilide** (DENNSTEDT), 1880, A., 634.
- di*Bromothiohydantoin** (KRAMPS), 1880, A., 631.
- 3-Bromothiohydroxybenzoic acid** (FRIEDRICH), 1874, 990.
- 6-Bromothymol**, methyl ether of (PATERNO and CANZONERI), 1880, A., 884.
- 6-Bromothymoquinol diacetate** (SCHULZ), 1882, A., 838.
- di*Bromothymoquinone** (ANDRESEN), 1881, A., 591.
- Bromotoluene.** See Toluene.
- Bromotoluenesulphonic acid.** See Toluenesulphonic acid.
- Bromotoluic acids**, *m*- and *p*-. See *m*- and *p*-Toluic acids.
- Bromotoluidine** See Toluidine.
- Bromotoluidinesulphonic acid.** See Toluidinesulphonic acid.
- o*-Bromotolyl mercaptan** (HÜBNER and POST), 1874, 59.
- Bromotolylene-2:4-diamine** (RUHEMANN), 1882, A., 392.
- Bromotolylene-2:6-diamine-4-sulphonic acid** (SCHWANERT), 1877, ii., 472.
- tri-p*-Bromotribenzylamine** (JACKSON and LOWERY), 1882, A., 170.
- Bromotrihydroxyquinone** (MERZ and ZETTER), 1880, A., 114.
- Bromovaleric acid.** See Valeric acid.
- Bromovalerolactone** (FITTIG and MESSERSCHMIDT), 1882, A., 35.
- Bromo-vanillic and -veratric acids and dibromoveratrol** (MATSMOTO), 1878, A., 502.
- Bromovanillin** (TIEMANN and HAARMANN), 1874, 896.
- di*Bromo-*o*-vinylanisole** (PERKIN), 1881, T., 418.
- Bromoxaform.** See Acetone, *pentabrom*.
- Bromoxylene.** See Xylene.
- 4-Bromo-*m*-xylene-2-sulphonamide**, and **4:6-diBromo-*m*-xylene-2-sulphonic acid** (JACOBSEN and WEINBERG), 1879, A., 61.
- 5-Bromo-*m*-xylene-4-sulphonic acid**, and its salts and amide (WEINBERG), 1878, A., 724.
- tri*Bromo-1:2:4-xyleneol**, *mono*-, *di*-, and ***tri*-bromo-1:3:4-xyleneol**, and *mono*- and ***tri*-bromo-1:4:2-xyleneol** (JACOBSEN), 1878, A., 411.
- Bromoxyleucotin**, *mono*-, and *di*-. (v. JOEST and HESSE), 1880, A., 327.
- 4:6-diBromo-*m*-xylo-2:5-quinone** (JACOBSEN), 1879, A., 530.
- di*Bromo-*p*-xylo-2:5-quinone** (CARSTANJEN), 1882, A., 612.
- sesqui*Bromoxysacchulimide** (SESTINI), 1882, A., 1182.
- Bromozanzaloin** (TILDEN), 1875, 1270.
- Bronze** articles, method of finishing (DIETLEN), 1876, ii., 227.
- bar, and Egyptian figures and hook, composition of (FLIGHT), 1882, T., 141.
- money, analysis of (BUSSE), 1878, A., 341.
- monuments, exposed, preservation of (BRÜHL), 1882, A., 669.
- of the ancients (REYER), 1882, A., 805.
- antique, composition of an (REICHHARDT), 1873, 1201.
- Chinese and Japanese, of unusually deep colour (MORIN), 1874, 927.
- Japanese (MAUMENÉ), 1875, 790.
- Cypriote, Romano-British, Greek and Roman, composition of (FLIGHT), 1882, T., 144.
- phosphorus, and their uses (ANON.), 1877, ii., 376.
- tungsten- (PHILIPP and SCHWEBEL), 1880, A., 157; (PHILIPP), 1882, A., 930.
- Bronzes**, formation of patina on (WEBER), 1882, A., 1334.
- coating of, with gold varnish (ANON.), 1875, 1303.
- certain reagents, by means of which surface-colourations of various tints may be produced on (CHRISTOFFLE and BOUILHET), 1874, 1024.
- Bronzite** from Dun Mountain, near Nelson, New Zealand (HILGER), 1880, A., 857.
- Brookite** (v. LASAULX), 1881, A., 236.
- crystalline form of (SCHRAUF), 1874, 235; 1878, A., 115.
- from the gold-washings of Atliansk near Miask in the Urals (VOM RATH), 1876, ii., 51.
- See also Titanium dioxide.
- Brown spar**, after euprite (DÖLL), 1875, 873.
- Brucine.** See under Alkaloids.
- Brucite** (SJÖGREN), 1880, A., 15; 1881, A., 698.
- See also Magnesium hydroxide.

- Bryoniae**, composition of (SACC), 1882, A., 884.
- Buchonite** (v. SANDBERGER), 1873, 608; 1874, 135.
- Buchu leaves** constituents of (FLÜCKIGER), 1874, 494; (WAYNE), 1876, ii., 207; (JONES), 1879, A., 391.
- Buckwheat**, composition of (LECHARTIER), 1881, A., 1164; 1882, A., 642.
- Buddha**, figure of, ancient Indian, composition of (FLIGHT), 1882, T., 138.
- Building materials**, porosity of some (LANG), 1876, i., 800.
- Building stone**, the so-called "volcanic" (ANON.), 1873, 952.  
fire-resisting, qualities of various (OTT), 1873, 660.
- Bunsen lamp**, theory of the (THORPE), 1877, i., 627.  
action of air in rendering the flame of the, less luminous (BLOCHMANN), 1882, A., 129.  
luminosity of the flame of the, induced by heating the tube (BLOCHMANN), 1882, A., 256.  
non-luminous flame of the (BLOCHMANN), 1874, 17.  
non-luminosity of the flame of the (HEUMANN), 1881, A., 773; 1882, A., 129.  
new method of testing with flame of the (HUSON), 1873, 1158.
- Bunt**. See Agricultural Chemistry.
- Burette**, new form of (PINCHON), 1875, 1297.  
convenient stopper for (MYLIUS), 1874, 822.
- Burial and cremation** (FISCHER), 1875, 676, 1304.
- Burner**, universal (MUENCKE), 1874, 653.  
gas-, glass, new arrangement for (LECOQ DE BOISBAUDRAN), 1875, 1236.  
and flame, distance between (HEUMANN), 1876, i., 36.
- Bustamite** from Långban, analysis of (LINDSTRÖM), 1882, A., 291.
- Butaldehyde**,  $\beta$ -chloro- (KARETNIKOFF), 1880, A., 235.  
*trichloro-* (*butylchloral*; *crotonic chloral*) (PINNER), 1876, i., 552.  
bye-products from the preparation of (PINNER), 1876, i., 553.  
action of potassium cyanide on (WALLACH and BOEHRINGER), 1874, 461.  
action of zinc ethyl on (v. GARZAROLLI-THURNLACKH), 1882, A., 824, 1279.
- Butaldehyde**, *trichloro-* (*butylchloral*; *crotonic chloral*), compound of, with benzene (HEPP), 1875, 362.  
hydrocyanide. See Hydroxyvaleronitrile, *trichloro-*.
- Orthobutaldehyde**, *trichloro-*, dissociation of (ENGEL and MOITESIER), 1881, A., 407.
- isoButaldehyde**, commercial (BARBAGLIA), 1873, 1217.  
from light resin oil (TILDEN), 1881, A., 101.  
action of ammonia on (LIPP), 1880, A., 620; 1881, A., 84.  
action of hydrochloric acid gas on (OECONOMIDES), 1882, A., 32.  
action of phosphorus pentachloride on (OECONOMIDES), 1881, A., 709.  
action of potassium carbonate on (URECH), 1879, A., 520; 1880, A., 103, 538.  
action of sulphuric acid on (MARKOWNIKOFF), 1874, 144.  
condensation-products of (FOSSEK), 1882, A., 161.  
ammonia compound of, action of hydrogen cyanide on (LIPP), 1881, A., 84.  
some derivatives of (LIPP), 1880, A., 620; 1881, A., 84; (FOSSEK), 1882, A., 1278.  
*trichloroacetone* obtained from the so-called (KRAEMER), 1874, 676.  
polymerides of (URECH), 1880, A., 104.
- Para-isobutaldehyde**, and the action of chlorine on (BARBAGLIA), 1873, 378, 877; 1874, 46.
- Polyisobutaldehyde**, vapour-density of (URECH), 1880, A., 620.  
action of certain reagents on (URECH), 1880, A., 103.
- n-Butaldehyde-ammonia** (LIPP), 1882, A., 709.  
*trichloro-*, action of benzaldehyde on (SCHIFF), 1879, A., 452.
- Butaldehydeurethane**, *trichloro-* (BISCHOFF), 1874, 891.
- n-Butane**, action of bromine on (MERZ and WEITH), 1879, A., 302.  
*di*bromo- (*butylenic bromide*) from *n*-butylic alcohol (GRABOWSKI and SAYTZEFF), 1876, i., 542.  
bromonitro-, *di*bromonitro-, bromodinitro- and nitro- (ZÜBLIN), 1878, A., 284.  
*tetrachloro-* (*trichlorobutylic chloride*) (v. GARZAROLLI-THURNLACKH), 1882, A., 1279.  
 $\alpha$ -dinitro- (ZÜBLIN), 1878, A., 284; (CHANCEL), 1882, A., 825.

- n*-Butane,  $\beta$ -dinitro- (MEYER), 1876, ii., 288.  
 dinitro- (*butylnitrous acid*), and some of its salts (CHANCEL), 1882, A., 710.  
 dinitro- (*butylene nitrite*) (BEILSTEIN and KURBATOFF), 1881, A., 1021.  
*iso*Butane, action of bromine on (MERZ and WEITH), 1879, A., 302.  
 ultimate action of chlorine on (KRAFFT and MERZ), 1876, i., 540.  
 dibromo- (*isobutylene bromide*) (NEVOMÉ), 1876, i., 59.  
 hexabromo- (MERZ and WEITH), 1879, A., 302.  
 bromo-*mono*- and -*di*-nitro- (ZÜBLIN), 1878, A., 284.  
 dibromonitro- (DEMOLE), 1875, 563.  
 dichloro- (*isobutylidene chloride*) (PÜCHOT), 1878, A., 20; (OECONOMIDES), 1881, A., 710.  
 action of ammonia on (OECONOMIDES), 1881, A., 793.  
 nitro- (DEMOLE), 1874, 984.  
 action of iron and acetic acid, and of nitrous acid on (DEMOLE), 1875, 561.  
 dinitro-, and its silver and potassium compounds (ZÜBLIN), 1878, A., 284.  
*tert.*-Butane, nitro- (TCHERNIAC), 1875, 50; 1876, i., 902.  
 Butanecarboxylic acid. See Butyric acid.  
 Butanedicarboxylic acid. See Adipic acid, Dimethylsuccinic acid, Ethylsuccinic acid, Methylglutaric acid, Methylsuccinic acid, *iso*Propylmalonic acid.  
*iso*Butanesulphinic acid (PAULY), 1877, ii., 735.  
 Butanesulphonic acid (GRABOWSKI and SAYTZEFF), 1874, 565.  
*iso*Butanesulphonic acid (MYLIUS), 1873, 267.  
*iso*Butene chlorhydrate. See *iso*Butylic alcohol,  $\alpha$ -chloro-.  
 Butenyl acetate (*crotyl acetate*) chloro- (v. GARZAROLLI-THURNLACKH), 1882, A., 1280.  
 alcohol (LIEBEN and ZEISEL), 1881, A., 710.  
 chloro- (v. GARZAROLLI-THURNLACKH), 1882, A., 1279.  
*o*-Butenylanisole (PERKIN), 1878, T., 213.  
*p*-Butenylanisole (PERKIN), 1877, ii., 671.  
*p-iso*Butenylanisole (PERKIN), 1879, T., 145.  
 Butenylbenzene. See Phenylbutylene.  
 "*iso*Butenylbutylideneamine" (LIPP), 1882, A., 164.  
 Butenylcinnamene. See Butenylstyrene.  
 $\alpha$ -Butenylcumene (*isopropylbutenylbenzene*) (PERKIN), 1877, ii., 665.  
 $\beta$ -Butenylcumene ( $\beta$ -*isopropylbutenylbenzene*) (PERKIN), 1879, T., 141.  
 Butenylglycerol. See Trihydroxybutane.  
*iso*Butenylphenol, *o*- and *p*- (PERKIN), 1879, T., 142.  
 Butenylstyrene (*butenylcinnamene*) (PERKIN), 1879, T., 141.  
 Butinene (*crotonylene*), identity of, with ethylacetylene (PRUNIER), 1873, 1014.  
 Butinoyl- $\psi$ -thiocarbamide (NENCKI and SIEBER), 1882, A., 501.  
 Butter, analysis of two ancient samples of (WIGNER and CHURCH), 1880, A., 357.  
 ghea- or shea- (DEITE), 1879, A., 568.  
 See also Agricultural Chemistry.  
 Butterine. See Margarine.  
 Butyl ether. See Dibutyl oxide.  
*n*-Butyl mercaptan (GRABOWSKI and SAYTZEFF), 1874, 565.  
*sec.*-Butyl mercaptan (REYMANN), 1875, 141.  
*iso*Butylacetal (GIRARD), 1881, A., 34.  
*iso*Butylacetic acid. See *iso*Hexoic acid.  
*iso*Butylacetone (DEMARÇAY), 1878, A., 661.  
*iso*Butylal, preparation of (OECONOMIDES), 1881, A., 711.  
 compound obtained in the preparation of (OECONOMIDES), 1882, A., 32.  
*iso*Butylallylmalonic acid (BALLÓ), 1881, A., 415.  
*iso*Butylamaric acid and anhydride (ZININ), 1878, A., 153.  
 Butylamine (ZÜBLIN), 1878, A., 284.  
 formation of, from nitrobutane (TCHERNIAC), 1875, 50.  
 hydrochloride (ZÜBLIN), 1878, A., 284.  
*tert.*-Butylamine and its salts (RUDNEFF), 1879, A., 40, 141, 713; 1880, A., 545.  
*tert.*-Butyl-*tert.*-amylamine (RUDNEFF), 1880, A., 546.  
*iso*Butylaniline and its salts (GIANNETTI), 1882, A., 1059.  
*p-iso*Butylanisole (STUDER), 1882, A., 176.  
*iso*Butylanthracene (LIEBERMANN and TOBIAS), 1881, A., 737; 1882, A., 862.  
*iso*Butylazophenyl, nitro-. See Benzeneazono*iso*butane under Azo-.



- Butylbenzene**, *n*-, *iso*-, and *sec*-. (RADZISZEWSKI), 1876, i., 915.
- iso***Butylbenzene**, formation of (KÖHLER and ARONHEIM), 1875, 1189; (WREDEN and DE ZNATOWICZ), 1877, ii., 885; (GOLDSCHMIDT), 1882, A., 952, 1196.
- amido-, and some of its derivatives (STUDER), 1881, A., 898; 1882, A., 176.
- n*-**Butylbenzenesulphonic acids** (BALBIANO), 1878, A., 314.
- iso***Butylbenzimid-ether** (PINNER and KLEIN), 1878, A., 491.
- Butylbromal butylalcoholate** (HARDY), 1875, 245.
- iso***Butylcamphene** (SPITZER), 1879, A., 168.
- Butylchloral**. See Butaldehyde, *trichloro*-.
- Butylchloral hydrocyanide**. See Hydroxyvaleronitrile, *trichloro*-.
- iso***Butyldihydroanthracene** (LIEBERMANN and WALDER), 1881, A., 609; (LIEBERMANN and LANDSHOFF), 1882, A., 861.
- iso***Butyldihydroanthranol** (LIEBERMANN and TOBIAS), 1881, A., 737; 1882, A., 862.
- n*-**Butylene** (*ethylvinyl*), derivatives of (NEVOLÉ), 1877, ii., 867.
- di*bromo- (PRUNIER), 1873, 487; (NEVOLÉ), 1876, i., 59.
- iodo- (*crotonyl iodide*) (LIEBEN and ZEISEL), 1881, A., 711.
- nitro-, and its reactions and homologues (HAITINGER), 1879, A., 700; 1881, A., 1114.
- sodium- (HAITINGER), 1879, A., 701.
- $\psi$ -**Butylene** ( $\beta$ -*butylene*; *s*-*dimethylethylcne*), formation of (NEVOLÉ), 1876, i., 59; (LE BEL and GREENE), 1878, A., 773; (FITTING and PAGENSTECHE), 1879, A., 456; (OECHSNER DE CONINCK), 1881, A., 239; (ELTEKOFF), 1881, A., 400.
- iso***Butylene** ( $\gamma$ -*butylene*) (PUCHOT), 1878, A., 20; (KONOWALOFF), 1881, A., 400.
- formation of (NEVOLÉ), 1876, i., 59; (ELTEKOFF), 1881, A., 400.
- action of *tert*-.butylic iodide on, in presence of calcium oxide (LERMONTOFF), 1878, A., 963.
- action of hydrochloric acid on (SALESKY), 1873, 43, 368.
- action of oxidising agents on (O. and F. ZEIDLER), 1879, A., 908.
- derivatives of (PUCHOT), 1878, A., 20.
- iso***Butylene**, chloro- (OECONOMIDES), 1881, A., 709.
- iso***Butylene**, chloro-, action of hypochlorous acid on (OECONOMIDES), 1881, A., 793.
- Butylenes**, threeisomeric (GROSHEINTZ), 1878, A., 562.
- Butyleneguanamine** (v. BANDROWSKI), 1876, ii., 190.
- n*-**Butylenic glycol** (1:2-*dihydroxybutane*) (GRABOWSKI and SAYTZEFF), 1876, i., 542; (NEVOLÉ), 1877, ii., 868.
- iso***Butylenic glycol** in wine (HENNINGER), 1882, A., 1249.
- oxide (*isocrotyl ether*) (WOLKOW), 1873, 747.
- Butylenic bromide**. See Butane, *di*-bromo-.
- nitrite (*dinitrobutane*) (BEILSTEIN and KURBATOFF), 1881, A., 1021.
- d*initrite (HAITINGER), 1881, A., 1114.
- iso***Butylenic dichloride**. See *iso*Butane, *dichloro*-.
- iso***Butylethylc xanthionate**. See Ethylic butylic *dithiocarbonate*.
- iso***Buty Eugenol** (CAHOURES), 1877, i., 462.
- iso***Butylformic acid**. See *iso*Valeric acid.
- Butylglyceric acid** (HANRIOT), 1879, A., 1032.
- Butylglyoxaline**, chloro- (WALLACH and SCHULZE), 1880, A., 547.
- iso***Butyl-group**, constitutional changes in the molecule of (BRAUNER), 1880, A., 229.
- iso***Butylhydroxymalonic acid**. See *iso*-Butyltartronic acid.
- n*-**Butylic alcohol**, preparation of, from glycerol (FITZ), 1880, A., 819.
- action of bleaching powder on (REGNAULT and HARDY), 1880, A., 456.
- action of zinc chloride on (LE BEL and GREENE), 1879, A., 1029.
- butylenic bromide and butylenic glycol from (GRABOWSKI and SAYTZEFF), 1876, i., 542.
- trichloro*-. (v. GARZAROLLI-THURNLACKH), 1882, A., 824, 1279; (v. MERING), 1882, A., 952.
- iso***Butylic alcohol**, commercial and pure (BARBAGLIA), 1873, 1217.
- preparation of (BUTLEROFF), 1873, 1014.
- heat of combustion of (LUGININ), 1880, A., 787.
- etherification of (MENSCHUTKIN), 1881, A., 884.
- action of sulphuryl chloride on (BEHREND), 1877, ii., 289.

- iso*Butylic alcohol, action of zinc chloride on (LE BEL and GREENE), 1879, A., 1029.  
 two isomeric butylenes obtained by the action of zinc chloride on, from fermentation (NEVOLÉ), 1876, i., 59.  
 oxidation of (SCHMIDT), 1875, 245.  
 products of the oxidation of, and on the trichloracetone from the so-called *isobutylaldehyde* (KRAEMER), 1874, 676.  
 aluminium derivative of (GLADSTONE and TRIBE), 1881, T., 6.  
 $\alpha$ -chloro- (*isobutene chlorhydrate*) (HENRY), 1876, ii., 397.  
*sec.*-Butylic alcohol (*methylethylcarbinol*), preparation of (KANONNIKOFF and SAYTZEFF), 1875, 626.  
 some derivatives of (REYMANN), 1875, 141.  
*tert.*-Butylic alcohol (*trimethylcarbinol*) (BUTLEROFF), 1873, 369; (BUTLEROFF and GORJAINOFF), 1873, 873; (PAWLOFF), 1877, ii., 310; (DOBBS), 1880, T., 238.  
 apparent occurrence of, as a product of alcoholic fermentation (FREUND), 1876, i., 543.  
 formation of (BUTLEROFF), 1873, 1119; (LINNEMANN), 1874, 244.  
 heat of combustion of (LUGININ), 1882, A., 356, 568.  
 action of chlorine on (LOIDL), 1876, i., 365.  
 action of dilute sulphuric acid on (BUTLEROFF), 1877, ii., 874.  
*n*-Butylic acetate, trichloro- (v. GARZAROLLI-THURNLACKH), 1882, A., 824, 1279.  
 carbonate (LIEBEN and ROSSI), 1873, 367.  
 chloride, trichloro- (v. GARZAROLLI-THURNLACKH), 1882, A., 1279.  
 hippurate (CAMPANI and BIZZARRI), 1880, A., 870.  
 sulphide (GRABOWSKI and SAYTZEFF), 1874, 565.  
 action of nitric acid on (GRABOWSKI), 1875, 628.  
 sulphoxide (GRABOWSKI), 1875, 629.  
 terephthalate (BERGER), 1878, A., 152.  
*iso*Butylic acetate (HODGKINSON), 1880, T., 485.  
 acetoacetate (EMMERLING and OPPENHEIM), 1876, ii., 505.  
 bromide, decomposition by heat (dissociation) of (ELTEKOFF), 1876, i., 541.  
 isobutyrate, action of bromine on (URECH), 1881, A., 248.
- iso*Butylic butyrates (GRÜNZWEIG), 1873, 374.  
 carbamate (MYLIUS), 1873, 266.  
 o-carbonate and chloroformate (RÖSE), 1881, A., 252.  
 chlorocarbonate and chloroformate (MYLIUS), 1873, 266.  
 $\alpha\alpha$ -dichloropropionate (BECKURTS and OTTO), 1877, ii., 181.  
 cyanate (BRAUNER), 1880, A., 228.  
 cyanoformate and *paracyanoformate* (WEDDICE), 1875, 447.  
 diisobutyl-o-glyoxylate (PINNER and KLEIN), 1879, A., 47.  
 fumarate, preparation of, and action of sodium alcoholates on (PURDIE), 1881, T., 344.  
 hippurate (CAMPANI and BIZZARRI), 1880, A., 870.  
 iodide, preparation of (BUTLEROFF), 1873, 1014.  
 action of, on chlorine (PRUNIER), 1875, 1248.  
 action of silver cyanate on (BRAUNER), 1880, A., 228.  
 direct conversion of, into trimethylcarbinylamine, and its salts (BRAUNER), 1878, A., 779.  
 oxalate and o-silicate (CAHOURES), 1874, 349.  
 phenylacetate, action of sodium on (HODGKINSON), 1880, T., 485.  
 phenylcarbamate (MYLIUS), 1873, 266.  
 terephthalate (BERGER), 1878, A., 152.  
 santonate (CARNELUTTI and NASINI), 1881, A., 181.  
 thioacetate, boiling point of (WALLACH and BLEIBTREU), 1879, A., 786.  
 thiocarbamate (MYLIUS), 1873, 266; (BLANKENHORN), 1878, A., 215.  
 trithiocarbonate (MYLIUS), 1873, 873.  
 isovalerate, density, boiling point and rotatory power of (PIERRE and PUCHOT), 1873, 1017.  
 sulphide (GRABOWSKI and SAYTZEFF), 1874, 565; (REYMANN), 1875, 141.  
*tert.*-Butylic bromide (ROOZEBOOM), 1882, A., 154.  
 action of triethylamine on (REBOUL), 1881, A., 1025.  
 chloride from *isobutylene* (SALESSKY), 1873, 43, 368.  
 cyanate (BRAUNER), 1880, A., 228.  
 iodide (BUTLEROFF), 1873, 1014.  
 and its decompositions (DOBBS), 1880, T., 236.
- iso*Butylideneamidobenzoic acid (SCHIFF), 1882, A., 304.  
 Butylideneimide, trichloro- (PINNER and KLEIN), 1879, A., 42; (SCHIFF), 1879, A., 452.

- iso*Butylidenic chloride. See *iso*Butane, *dichloro*.
- Butylides, metallic (CAHOURS), 1874, 349.
- iso*Butylmalic acid (PURDIE), 1881, T., 355.
- iso*Butylmalonic acid (GUTHZEIT), 1882, A., 39.
- iso*Butylmethylamine. See Amylamine.
- iso*Butylmethylglyceric acid. See  $\alpha\beta$ -Dihydroxyoctoic acid.
- Butyl- $\psi$ -nitrole (MEYER and LOCHER), 1876, i., 904.
- Butylnitric acid (ZÜBLIN), 1878, A., 284.
- Butylnitrous acid. See *n*-Butane, *di*-nitro.
- iso*Butyloxanthranol (LIEBERMANN and WALDER), 1881, A., 609; (LIEBERMANN and LANDSHOFF), 1882, A., 861.
- iso*Butyloxanthranyl chloride (LIEBERMANN and LANDSHOFF), 1881, A., 608; 1882, A., 862; (LIEBERMANN and WALDER), 1881, A., 610.
- p-iso*Butylphenol (STUDER), 1881, A., 898; (LIEBERMANN), 1882, A., 727.
- synthesis of (LIEBMAN), 1882, A., 171, 727.
- synthesis of, by means of anhydrous magnesium chloride (MAZZARA), 1882, A., 838.
- action of phosphoric anhydride on (STUDER), 1882, A., 176.
- iso*Butylphenolsulphonic acid (LIEBMAN), 1882, A., 727.
- $\psi$ -Butylphenylic alcohol. See  $\alpha$ -Phenylbutylic alcohol.
- iso*Butyl-phosphine and -phosphinic acid (V. HOFMANN), 1873, 882.
- iso*Butylsulphinic acid. See *iso*Butane-sulphinic acid.
- n*-Butylsulphone (GRABOWSKI and SATZGEFF), 1874, 565.
- preparation of (GRABOWSKI), 1875, 629.
- Butylsulphuric acid (LIEBEN and ROSSI), 1873, 367.
- iso*Butyltartronic acid (*isobutylhydroxymalonic acid*) (CONRAD and BISCHOFF), 1880, A., 629; (CONRAD), 1881, A., 577; (GUTHZEIT), 1882, A., 40.
- iso*Butylisothioacetanilide, boiling point of (WALLACH and BLEIBTREU), 1879, A., 786.
- tert.*-Butylthio-carbamide and -carbimide (RUDNEFF), 1879, A., 713; 1880, A., 548.
- m-iso* and  $\psi$ -Butyltoluene (*methylbutylbenzene*) (KELBE), 1881, A., 809.
- p-iso*Butyltoluene, synthesis of (GOLD-SCHMIDT), 1882, A., 952.
- iso*Butylurethane. See *iso*Butylic carbamate.
- iso*Butylxanthamide (BLANKENHORN), 1878, A., 215.
- n*-Butyr-amide and -anilide,  $\beta$ -amido- (BALBIANO), 1880, A., 461, 541.
- iso*Butyramide, bromo- (V. HOFMANN), 1882, A., 1052.
- $\beta$ -Butyranilbetaine (BALBIANO), 1880, A., 462, 542.
- Butyric acid (*butanecarboxylic acid*) (GRILLONE), 1873, 375; (HECHT), 1878, A., 962; (HECHT and MUNIER), 1878, A., 966.
- from various sources (GRÜNZWEIG), 1873, 373.
- conversion of ethylic acetate into (LJUBAVIN), 1881, A., 249.
- action of chlorine on (BALBIANO), 1878, A., 134.
- action of, on codeine and morphine (BECKETT and WRIGHT), 1875, 15.
- decomposition of, by zinc-dust (JAHN), 1881, A., 142.
- oxidation of (ERLENMEYER, SIGEL and BELLI), 1874, 980; 1876, i., 893.
- ammonium salt of, solubility of lead carbonate in (BERTRAND), 1877, i., 283.
- calcium and barium double salt of (FITZ), 1880, A., 799.
- calcium salt of, compound of, with lead propionate, crystallography of (FITZ), 1881, A., 797.
- compound of calcium chloride with (LIEBEN), 1881, A., 712.
- caproic acid contained in (LIEBEN), 1874, 248.
- remarkable transformation of, into *iso*butyric acid (ERLENMEYER), 1876, ii., 399.
- chloranhydride of, heat of decomposition of (LUGGIN), 1874, 356.
- Butyric acid,  $\beta$ -amido- (BALBIANO), 1880, A., 541.
- bromo-, acids of the formula  $C_8H_{14}O_4$ , derived from (HELL and MÜHLHÄUSER), 1880, A., 543.
- $\alpha$ -bromo-, decomposition of, by water (FITTIG and THOMSON), 1880, A., 380.
- $\alpha\beta$ -*di*bromo- (MICHAEL and NORTON), 1881, A., 798; (ERLENMEYER and MÜLLER), 1882, A., 598.
- tribromo*- (MICHAEL and NORTON), 1881, A., 799.
- tetrabromo*-, formation of, from mucobromic acid (LIMPRICHT), 1873, 625.

- Butyric acid**, chloro- (BALBIANO), 1878, A., 134.  
 $\beta$ -chloro- (PINNER), 1880, A., 99.  
 and some of its derivatives (BALBIANO), 1878, A., 658; 1880, A., 541.  
*di*chloro- (BALBIANO), 1878, A., 134.  
*tri*chloro- (V. GARZAROLLI-THURN-LACKH), 1876, ii., 623; 1877, i., 59.  
 nitroso- (WLEÜGEL), 1882, A., 944.  
*iso***Butyric acid** (PIERRE and PUCHOT), 1873, 55, 615; (GRÜNZWEIG), 1873, 374; (HODGKINSON), 1878, T., 495.  
 in Roman chamomile oil (FITTIG), 1877, i., 97; ii., 429.  
 formation of, by fusing pyroterebic acid with potash (WILLIAMS), 1874, 71.  
 action of chlorine on (KRAFFT), 1876, ii., 503.  
 action of sodium acetate on a mixture of phthalic anhydride and (GABRIEL and MICHAEL), 1879, A., 246.  
 remarkable transformation of butyric acid into (ERLENMEYER), 1876, ii., 399.  
 barium salt of, and compound of, with barium acetate, crystallography of (FITZ), 1880, A., 799.  
 calcium salt of, dry distillation of (BARBAGLIA and GUCCI), 1881, A., 35.  
*iso***Butyric acid**,  $\alpha$ -amido-, preparation of (URECH), 1873, 59.  
 hydrochloride of (TIEMANN and FRIEDLÄNDER), 1882, A., 56.  
 bromo-, action of alcoholic potash on (HELL and WALDBAUER), 1877, ii., 313.  
 $\alpha$ -bromo-, decomposition of, by water (FITTIG and THOMSON), 1880, A., 380.  
 $\beta$ -bromo- (FITTIG and ENGELHORN), 1880, A., 379.  
 $\alpha$ -chloro-, and some of its derivatives (BALBIANO), 1879, A., 615.  
*tri*chloro-, from citraconic acid (GOTTLIEB), 1874, 356; 1876, i., 561.  
*n*-**Butyric anhydride**, action of, on codeine and morphine (BECKETT and WRIGHT), 1875, 16.  
*iso***Butyric anhydride**, action of, on the aromatic aldehydes (PERKIN), 1879, T., 136.  
*n*-**Butyric bromide**,  $\alpha$ -bromo-, action of zinc methyl on (KASCHIRSKY), 1879, A., 46; 1882, A., 37.  
*is***Butyric bromide**,  $\alpha$ -brom-, action of zinc methyl on (KASCHIRSKY), 1882, A., 37.  
**Butyric coumarin**. See Ethylcoumarin.  
**Butyric fermentation**. See Fermentation.  
*iso***Butyric isovaleric acid**, imido- (*imido-dimethylacetodimethylpropionic acid*) (HEINTZ), 1880, A., 102.  
**Butyrocyanamide** (MEITENS), 1878, A., 396.  
**Butyrofuranic acid** (TÖNNIES), 1879, A., 916.  
**Butyrolacton** (SAYTZEFF), 1882, A., 497.  
**Butyrone**. See Dipropyl ketone.  
*iso***Butyronitrile**,  $\alpha$ -amido- (TIEMANN and FRIEDLÄNDER), 1882, A., 56.  
**Butyropropylcarbamide**, *n*- and *iso*- (V. HOFMANN), 1882, A., 1053.  
**Butyrylcodeine** (BECKETT and WRIGHT), 1875, 321.  
*n*-**Butyryl cyanide**, preparation of (MORITZ), 1881, T., 13.  
**Butyryl thiocyanate** (MIQUEL), 1877, ii., 869.  
**Butyrylformic acid**. See Propylglyoxylic acid.  
**Buxeine** (ALESSANDRI), 1882, A., 745.  
**Buxine and parabuxine** (ALESSANDRI), 1882, A., 745.  
**Parabuxine**, an alkaloid from *Buxus sempervirens* (PAVESI and ROTONDI), 1875, 178.  
*Buxus sempervirens*, active principles of (PAVESI and ROTONDI), 1875, 178; (ALESSANDRI), 1882, A., 744.  
**Byssolite**. See Tremolite.

## C.

- Cabbage**. See under Agricultural Chemistry.  
**Cabrerite** (FRENZEL), 1874, 1143.  
 from Laurium (DES CLOIZEAUX and DAMOUR), 1881, A., 691.  
**Cacao**. See Cocoa.  
**Cacao rind** as fodder for calves (SAMEK), 1880, A., 502.  
**Cacao-fat**. See Cocoa butter.  
**Cacholong** (LIVESIDGE), 1881, A., 992.  
**Cacochlor**. See Lithiophorite.  
**Cacodylic acid**. See Dimethylarsinic acid.  
**Cacostrychnine** (CLAUS and GLASSNER), 1881, A., 748.  
**Cacotheline** (CLAUS and RÜHRE), 1881, A., 749.  
**Cacoxene** (STRENG), 1881, A., 526; (FISCHER), 1881, A., 991.  
**Cadaveric alkaloids**. See Ptomaines.  
**Cadmium**, atomic weight of (HUNTINGTON), 1882, A., 363.  
 electrochemical deposition of (BERTRAND), 1877, i., 161.  
 thermochemical researches on (THOMSEN), 1876, i., 673.



- Cadmium**, combustion of (GRAMP), 1878, A., 110.  
 crystals of (KAEMMERER), 1875, 425.  
 action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 77.  
 use of, in calico-printing (ANON.), 1881, A., 1185.  
 combinations of, with phosphorus (RENAULT), 1873, 728.  
 double haloid salts of (EDER), 1877, i., 689.
- Cadmium arsenate** (DEMEI), 1879, A., 884; 1880, A., 217; (SALKOWSKI), 1880, A., 216.  
 arsenide (DESCAMPS), 1878, A., 706.  
 borotungstate (KLEIN), 1881, A., 879.  
   a solution of, of density 3.28, suitable for mineral analysis (KLEIN), 1881, A., 1168.  
 bromide, vapour density of (V. and C. MEYER), 1879, A., 875.  
 phosphide (EMMERLING), 1879, A., 508.  
 hypophosphite (RAMMELSBURG), 1873, 10.  
 sulphate, action of a copper cadmium couple on a solution of (RAOULT), 1873, 464.  
   equivalent precipitability of nickel sulphate and (MILLS and HUNT), 1882, A., 689.  
 sulphide, pasty (ANON.), 1874, 99.  
   some properties of (DITTE), 1877, ii., 843.  
   crystallisation of (HAUTEFEUILLE), 1882, A., 363.  
   solubility of, in ammonium sulphide (FRESENIUS), 1881, A., 941.
- Cadmium organic compounds**:—  
 gold cyanides (LINDBOM), 1878, A., 131.  
 ammonium ferricyanide (WYRUBOFF), 1877, ii., 869.  
 mercaptide (CLAËSSON), 1877, ii., 295.  
 oxycyanides (JOANNIS), 1881, A., 1116.
- Cadmium**, detection, estimation and separation:—  
 detection of (BAYLEY), 1878, T., 304.  
 detection of, in presence of copper (ORLOWSKI), 1882, A., 1232.  
 detection of, in presence of zinc (CHAPMAN), 1877, i., 490.  
 estimation of (FOLLENIUS), 1875, 481, 780; (BEILSTEIN and JAWEIN), 1879, A., 746; 1882, A., 98.  
 estimation, electrolytic, of (SMITH), 1879, A., 276, 746.  
 estimation of, in presence of zinc (HUTCHINSON), 1880, A., 748.  
 separation of, from zinc (KUPFFER-SCHLAGER), 1881, A., 849; 1882, A., 97.
- Cadmium**, separation of, from zinc and copper (HUTCHINSON), 1880, A., 748.
- Caesium**, atomic weight of (GODEFFROY), 1876, ii., 272.  
 preparation of, from lepidolite (PETERSON), 1877, ii., 706.  
 and its salts, preparation of (SETTERBERG), 1882, A., 464.  
 new salts of, and their reactions (GODEFFROY), 1875, 612; 1877, i., 685.  
 silicotungstate (GODEFFROY), 1877, i., 175.  
 salts, antimonous chloride as a test for (GODEFFROY), 1874, 816.
- Caffeic acid**, synthesis of, and derivatives of (TIEMANN and NAGAI), 1878, A., 579.
- Caffeidine**, and its ethide and hydrochloride (SCHMIDT), 1881, A., 747.
- Caffeine** (*theine*). See under Alkaloids.
- Caffeol** (ČECH), 1881, A., 100; (BERNHEIMER), 1881, A., 287; 1882, A., 232.
- Caffoline** (FISCHER), 1882, A., 217, 628.
- Caffuric acid** (FISCHER), 1882, A., 217; (MALY and ANDREASCH), 1882, A., 631.
- Cairngorm** of Branchville, Connecticut, gaseous substances contained in (WRIGHT; HAWES), 1882, A., 474.
- Cajeput oil** (WRIGHT and LAMBERT), 1874, 619.
- Cajeputol**. See Cineol under Terpenes.
- Calaite** (*turquoise*), detection of natural and artificial (POILL), 1879, A., 209.
- Calamine** rich in indium (A. and G. DE NEGRI), 1878, A., 708.  
 analysis of (HILGER), 1880, A., 857.  
 residues, utilisation of (SCHWARZ), 1876, i., 795.
- Calamus oil** (KURBATOFF), 1874, 259; 1875, 91.
- Calamus Rotang*, analysis of the ash of the wood of (HORNBERGER, MUTSCHLER, and HAMMERBACHER), 1875, 910.
- Calaverite** (BURKART), 1874, 33; (GENTH), 1875, 432; 1878, A., 383.
- Calcite** (*calcespar*) (FRENZEL), 1876, i., 52; (V. ZEPHAROVICH), 1881, A., 996.  
 crystallography of (IRBY), 1880, A., 530; (V. ZEPHAROVICH), 1881, A., 232.  
 artificial production of (MIROX and BRUNEAR), 1882, A., 1270.  
 twins, artificial (BAUMHAUER), 1881, A., 397.  
 hemimorphism in (BAUER), 1873, 1012.

**Calcite** (*calcspar*), appearances produced in, by pressure (v. REPSCH), 1873, 257.

pseudomorphs of, after aragonite (VOM RATH), 1880, A., 15.

pseudomorph of, after augite and gaylussite (GEINITZ), 1877, i., 696.

pseudomorph of, after dolomite (v. LASAULX), 1876, ii., 488.

action of oxalic and nitric acids on (EMMERLING), 1877, ii., 348.

from Andreasberg (HESSENBERG), 1875, 1244.

Elba, new combination of, and a rare development of a crystal of calcite from Oberstein (VOM RATH), 1877, ii., 170.

in basalt-tufa from Owener Bülle (LEITZE), 1881, A., 998.

from the Röðefjord, Iceland (HESSENBERG), 1873, 857.

of Russia (v. KOKSCHAROFF), 1876, i., 525.

and quartz crystals, remarkable intergrowths of, from Schneeberg in Saxony (FRENZEL and VOM RATH), 1875, 873.

See also Calcium carbonate.

**Calcium**, preparation of (FREY), 1877, i., 689.

spectrum of (LOCKYER), 1876, ii., 35; (CIAMICIAN), 1880, A., 361; 1882, A., 349.

volatility of (MALLER), 1876, ii., 354.

dissociation of (VOGEL), 1880, A., 597.

**Calcium salts** and water, absorption of, by leaves (BÖHM), 1877, ii., 209, 350.

retort for preparing ketones and aldehydes by the distillation of (TER MEER), 1876, ii., 395.

poisonous properties of (RABUTEAU and DUCOURAY), 1873, 521.

plant-nourishing value of (BÖHM), 1877, i., 735.

**Calcium aluminates**, solubility of, in water (LANDRIN), 1882, A., 903.

arsenate (FRENZEL), 1875, 738.

See also Wapplerite.

borate from Oregon (CHASE), 1873, 1206.

bromide, preparation of (MACDONALD), 1874, 590.

action of oxygen on (POTILIZIN), 1879, A., 770.

carbonate, polymorphism of (HERMANN), 1878, A., 702.

artificial pseudomorphosis of, after gypsum (DAMOUR), 1882, A., 282.

**Calcium carbonate**, action of heat on a mixture of calcium phosphate with (WIBEL), 1874, 542.

action of, on ammoniacal salts (NIVET), 1880, A., 700.

action of phosphoric acid on (RITTHAUSEN), 1878, A., 198.

action of sodium oxalate on (SMITH), 1877, ii., 245.

action of sulphur on (POLLACCI), 1875, 131, 612; (BELLUCCI), 1875, 131.

action of molten sulphur on (SESTINI), 1876, i., 879.

action of sulphur on, in presence of water (BRUGNATELLI and PELLOGGIO), 1875, 735.

action of tartaric acid on (GROSJEAN), 1877, ii., 647.

basic (RAOULT), 1882, A., 695.

in hydraulic cements (SCHILATSCHEKO), 1873, 97.

di-basic (RAOULT), 1881, A., 348.

pentahydrated (PFEIFFER), 1880, A., 789.

in water filtered through dry soil (STORER and LEWIS), 1880, A., 59.

precipitation of, by Potamogetons (WIBEL and ZACHARIAS), 1873, 765.

in the wood of dicotyledonous plants (MOLISCH), 1882, A., 82, 887.

See also Aragonite, Calcite, Chalk, Limestone and Marble.

hydrogen carbonate, dissociation of (LEMOINE), 1881, A., 1096.

magnesium carbonate. See Dolomite.

chloride (GLUGE), 1879, A., 562.

native, occurrence of, at Guy's Cliffe, Warwickshire (SPILLER), 1876, i., 154.

manufacture of, from blast-furnace slags (AMENC, CRIANDI, FABRE and MILUS), 1877, ii., 239.

affinity of, for water (MÜLLER-ERZBACH), 1878, A., 471.

action of oxygen on (POTILIZIN), 1879, A., 770.

hydrates of (LESCŒUR), 1881, A., 878.

compound of, with the fatty acids (LIEBEN), 1881, A., 712.

crystalline compounds of, with alcohols (HEINDL), 1882, A., 27.

use of, for watering the roadways of streets and parks (HOUSSEAU), 1876, ii., 674.

absorption of, by the animal system (PERI), 1880, A., 725.

- Calcium chloride**, mode of action of, in the coagulation of fibrin (HAMMARSTEN), 1877, i., 727.  
 oxychloride (GRIMSHAW), 1875, 337.  
 heat of formation of (BERTHELOT), 1882, A., 452; (ANDRÉ), 1882, A., 682.  
 hypochlorite from bleaching powder (KINGZETT) 1875, 404.  
 action of, on soluble cyanides, simple and double (ZINNO), 1876, i., 377.  
 action of sodium hypochlorite and, on urea (YVON), 1877, ii., 226.  
 See also Bleaching powder.  
 chromate, crystallised, preparation of (BOURGEOIS), 1881, A., 352.  
 potassium chromate as indicator in Mohr's method of chlorine estimation (ŠTOLBA), 1874, 1007.  
 fluoride. See Fluorspar.  
 hydroxide, heat of formation of (BERTHELOT), 1873, 1096.  
 action of carbon *disulphide* on (WALKER), 1874, 1135.  
 (*milk of lime*) amount of lime in, of different strengths (MATEJCZEK), 1875, 1052.  
 iodate, antiseptic properties of (SONSTADT), 1874, 394.  
*periodate*, basic (CROSS and SUGIRA), 1878, T., 409.  
 iodide, compound of, with silver iodide (SIMPSON), 1880, A., 442.  
 oxide (*lime*) in the guano deposit of Mejillones (DOMEYKO), 1880, A., 446.  
 in the crystalline state (BRÜGELMANN), 1878, A., 471, 770; 1880, A., 701; (LEVALLAIS and MEUNIER), 1880, A., 700.  
 solubility of, in water (LAMY), 1878, A., 373.  
 amount of, in milk of lime of different strengths (MATEJCZEK), 1875, 1052.  
 action of carbonic anhydride on (BIENBAUM and MAHN), 1880, A., 5; (RAOULT), 1881, A., 348.  
 action of sulphurous anhydride on (BIENBAUM and WITTICH), 1880, A., 606.  
 combination of glycerol and, and its pharmaceutical applications (CARLES), 1874, 722.  
 solubility of, in water in reference to the prescription for *Aqua Phagedænica* (COCX), 1879, A., 491.  
 importance of, to the animal organism (VOIT), 1881, A., 190.
- Calcium oxide** (*lime*), replacement of, in the bones (KÖNIG), 1875, 95.  
 loss of, in the body, especially in the bones, on an insufficient supply of lime (FORSTER), 1877, ii., 792.  
 composition of the bones of animals fed with food containing varying proportions of phosphoric acid and (WEISKE and WILDT), 1874, 489.  
 action of, on solutions of sugar (LAMY), 1877, i., 116; (DESOR), 1880, A., 834.  
 influence of, in saccharimetry (MÜNTZ), 1876, ii., 552.  
 value of, in brick-making (BISCHOF), 1880, A., 831.  
 action of quartz-sand and, on clays in the firing process (ARON), 1876, i., 448.  
 action of, on silica in mortar (ROBERTS), 1880, A., 216.  
 new cements of plaster and (LANDRIN), 1875, 106.  
 use of calcined, as a flux in the blast-furnace (BELL), 1876, i., 791.  
 See also Agricultural Chemistry.  
 dioxide (CONROY), 1873, 810; (SCHÖNE), 1874, 127.
- Calcium phosphate**, neutral (REICHARDT), 1873, 353.  
 hygroscopic character of (BIENBAUM), 1873, 1201.  
 action of heat on a mixture of calcium carbonate with (WIBEL), 1874, 542.  
 action of sodium carbonate on (FRÉBAULT and DESTREM), 1878, A., 113.  
 treatment of mineral and other substances containing small quantities of (ALLRED), 1881, A., 665.  
 analysis of (ERLENMEYER), 1882, A., 141.
- di*Calcium phosphate (MILLOT), 1877, i., 689; 1880, A., 442; (RITTHAUSEN), 1878, A., 198.  
 decomposition of (DELATRE), 1881, A., 683.  
 influence of ammonia on the estimation of (KÖNIG), 1881, A., 759.
- tri*Calcium phosphate, decomposition of, by water (WARINGTON), 1873, 983.  
 solubility of, in ammoniacal and neutral alkali-salts (TERREIL), 1881, A., 845.

*tri*Calcium phosphate, action of sulphuric acid on (ARMSBY), 1876, ii., 172.

effect of albumin on the solubility of, in the blood (MERCADANTE), 1876, i., 280.

pure, superphosphates from (WEIN), 1880, A., 141.

See also Apatite.

Calcium phosphates of Ciply in Belgium (NIVOIR), 1874, 1146.

of Curaçao (STELZNER), 1878, A., 120.

in Estremadura (DELESSE), 1878, A., 476.

in the Vosges (GRUYOT), 1879, A., 19.

action of ammonium citrate on (GRUPE and TOLLENS), 1880, A., 825; 1881, A., 845.

detection of, in the ammonium sulphide group (HILGER), 1875, 102.

estimation of (KÖNIG; GRUPE and TOLLENS), 1881, A., 759.

magnesium borophosphate, composition of (DOMEYKO), 1880, A., 447.

superphosphates. See Manures under Agricultural Chemistry.

phosphite (ROTHER), 1880, A., 5.

*hyp*phosphite (RAMMELSEBERG), 1873, 8.

preparation of (SHORT), 1882, A., 695.

platinochloride, solubility of, in alcohol (PRECHT), 1880, A., 579.

sulphate (*gypsum*), influence of the temperature of the voltaic arc on (EREMIN), 1882, A., 362.

crystallographic remarks on (LASPEYRES), 1876, ii., 53.

crystal-tectonic of (KLIEN), 1877, i., 582.

corrosion-figures of (WEISS), 1878, A., 550.

parallel-fibre formation of (LANG), 1876, i., 526.

pseudomorphs of glass and, in the form of gooseberries (WIBEL), 1873, 740.

absorption of ammonia gas by (JENKINS), 1876, ii., 172.

decomposition of, by water (DITTE), 1875, 332.

solubility of (MARIIGNAC), 1874, 1060.

solubility of, in water and in saline solutions (DROEZE), 1877, ii., 112.

solubility of, in glycerol (ASSELIN), 1873, 875.

Calcium sulphate (*gypsum*), action of magnesium carbonate on, in presence of common salt (FLEISCHER), 1873, 175.

action of, on potassium hydrogen tartrate (WARINGTON), 1875, 953.

action of, on the sulphates of the alkalis (DITTE), 1877, i., 410.

action of molten sulphur on (SESTINI), 1876, i., 879.

removal of, from water by means of barium oxalate (ANTHON), 1876, ii., 217.

effect of, on the constitution of wine (KAYSER), 1882, A., 434.

addition of, to must (MACAGNO), 1875, 198.

in the manufacture of sugar (v. WACHTEL), 1880, A., 831.

power of, to facilitate the decomposition of complex rocks and thereby increase the fertility of soils (COSSA), 1873, 1202.

double salts of (FASBENDER), 1877, i., 167; 1879, A., 203.

some compounds of (HANNAY), 1877, ii., 399.

estimation of, in beer (WILSON), 1879, A., 79.

estimation of, in wine (LOUYET), 1882, A., 96.

See also Alabaster, Anhydrite, Gypsum, and under Agricultural Chemistry.

potassium sulphate, decomposition of, by water (DITTE), 1875, 332.

sodium sulphate, crystallised (FOLKARD), 1881, A., 509.

sulphide, violet phosphorescence of (ABNEY), 1882, A., 677.

decomposition of, by calcium chloride (LUNGE), 1882, A., 562.

action of magnesium chloride on (STINGL and MORAWSKI), 1879, A., 1012.

thiosulphate, extraction of silver by means of (ANON.), 1877, i., 352.

titanate (v. LASAULX), 1881, A., 371.

tungstate from the bismuth lode of Meymac (CARNOT), 1874, 238.

See also Scheelite.

**Calcium organic compounds:—**

cyanide (JOANNIS), 1882, A., 484.

gold cyanides (LINDBOM), 1878, A., 131.

**Calcium, estimation and separation:—**

estimation of (VILLE), 1873, 294; 1875, 285.

estimation of, as lime (STINGL), 1879, A., 400.



- Calcium, estimation and separation:**—  
 estimation of, in presence of magnesia (BERNARD and EHRMANN), 1877, i., 343.  
 estimation of, in bone-char (DIVIS), 1874, 709.  
 separation of, from magnesium (SONSTADT), 1874, 915; (HAGER), 1882, A., 97.  
 separation of, from manganese (CLASSEN), 1877, ii., 805.
- Calco-uranite** (*autunite*) (BREZINA), 1881, A., 531.  
 in the phosphorite of Carceres (WIBEL), 1873, 1110.  
 composition of (CHURCH), 1875, 109.
- Calcespar.** See Calcite.
- Calculi, urinary, structural composition of** (CARTER), 1873, 517.  
 equine (CHITTENDEN), 1876, i., 727.  
 composition of (PETERS; MÜLLER), 1880, A., 174.  
 new kind of, from oxen (ROSTER), 1873, 398.
- Caledonite** (MASKELYNE and FLIGHT), 1874, 101.
- Caliatour wood, colouring matter of** (FRANCHIMONT and SICHERER), 1879, A., 470.
- Caliche.** See Sodium nitrate.
- Calico printing, apparatus for sifting colours for, under pressure** (ANON.), 1874, 400.  
 Schlumberger's electroplated cast-iron cylinders for (SCHAEFFER), 1875, 196.  
 use of cadmium in (ANON.), 1881, A., 1185.  
 with cerium aniline black (BÜHRIG), 1879, A., 633.  
 use of cerulignone in (v. MARX), 1874, 1028.  
 use of conversion colours in (BALANCHE), 1882, A., 564.  
 iron-liquor for (KIELMEYER), 1873, 1272.  
 use of sodium aluminate in (KIELMEYER), 1873, 1271.  
 use of thiocyanates in (ANON.), 1880, A., 358.
- "Californine,"** Winckler's (HESSE), 1879, A., 73.
- Callinite.** See Variscite.
- Calomel.** See Mercurous chloride under Mercury.
- Calorimeter, ice** (SCHULLER and WARTHA), 1878, A., 4.  
 determination of the emission coefficients of dark bodies by the (LEHNEBACH), 1875, 38.  
 mercury (BERTHELOT; FAVRE), 1873, 132, 838.
- Calorimetric measurements, comparison of the results of** (v. THAN), 1882, A., 265.  
 method (STÖHMANN), 1879, A., 586.  
 problems and values (BERTHELOT), 1874, 117.  
 studies (OSTWALD), 1882, A., 451.  
 on the state of bodies in solution (BERTHELOT), 1873, 838; 1874, 766.  
 temperature-determinations (MEYER), 1880, A., 434.
- Calorimetry.** See also Thermochemistry.
- Calves.** See Agricultural Chemistry.
- Calycic acid, and calycin** (HESSE), 1881, A., 180.
- Camellia japonica, investigation of the seeds of** (MARTIN and KATZUJAMA), 1879, A., 330.
- Camellin** (MARTIN and KATZUJAMA), 1879, A., 330.
- Camphene.** See under Terpenes.
- Camphic acid, and its salts** (DE MONTGOLFIER), 1876, ii., 87; 1878, A., 897; (HALLER), 1881, A., 1041.  
 transformation of, into camphor (DE MONTGOLFIER), 1879, A., 726.
- Camphic anhydride, melting point of** (ANSCHÜTZ), 1878, A., 136.
- Camphimide** (SCHIEFF), 1880, A., 892.
- Camphocarboxylic acid and its derivatives** (DOS SANTOS E SILVA), 1874, 70; (MUIR), 1880, T., 686; (KACHLER and SPITZER), 1880, A., 892; 1882, A., 66; (HALLER), 1881, A., 1041.  
 bromo- (DOS SANTOS E SILVA), 1874, 70.
- Camphol.** See Borneol.
- Campholene** (BALLÓ), 1879, A., 540.
- Campholic acid** (DE MONTGOLFIER), 1878, A., 900.
- Campholurethane, and its derivatives** (HALLER), 1882, A., 1213.
- Camphor** (WREDEN), 1879, A., 69.  
 laurel (BRUYLANTS), 1878, A., 158.  
 action of benzylic chloride on (TOMMASI), 1874, 312.  
 transformation of, into camphene and the inverse transformation (RIBAN), 1875, 1192; 1876, i., 245.  
 liquid (ALEXÉEFF), 1881, A., 438.  
 transformation of camphic acid into (DE MONTGOLFIER), 1879, A., 726.  
 constitution of- (KEKULÉ), 1873, 1228.  
 formula of (FLAWITZKY), 1879, A., 167.  
 new property of (BALLÓ), 1881, A., 438.

**Camphor**, gyratory movement of, on the surface of water (LESCEUR), 1876, i., 876.  
 specific rotatory power of (LANDOLT), 1876, ii., 373.  
 true function of (BERTHELOT), 1875, 348.  
 sublimation of, liquid oil from (BECKETT and WRIGHT), 1876, i., 7.  
 action of alkalis on (DE MONTGOLFIER), 1878, A., 900.  
 action of boron fluoride on (LANDOLPH), 1877, ii., 863; 1878, A., 586.  
 action of phosphorus pentachloride on (WRIGHT), 1873, 688; (SPITZER), 1880, A., 717.  
 action of some monatomic sodium alcohols on (DA SILVA), 1875, 1193.  
 action of zinc chloride on (DE MONTGOLFIER), 1878, A., 899.  
 oxidation-products of (KACHLER), 1875, 456; 1878, A., 512; 1880, A., 559; (DE MONTGOLFIER), 1877, ii., 903; 1878, A., 596; (BALLÓ), 1881, A., 438.  
 reduction-products of (SCHRÖTTER), 1881, A., 100.  
 combination of, with aldehyde (CAZENEUVE), 1882, A., 526.  
 combination of, with chloral hydrate (BROWN), 1874, 723; (CAZENEUVE and IMBERT), 1881, A., 180.  
 compounds (KACHLER), 1874, 154; 1878, A., 512; (DE MONTGOLFIER), 1878, A., 891.  
 containing nitrogen (SCHIFF), 1882, A., 527.  
 constitution of (BALLÓ), 1880, A., 50.  
 crystallo-optical investigation of (v. ZEPHAROVICH), 1877, i., 594.  
 sodium- (SCHIFF), 1880, A., 892.  
 action of oxygen on (DE MONTGOLFIER), 1878, A., 898.  
 dichloride (SPITZER), 1878, A., 586; 1879, A., 168; 1880, A., 717.  
 relation of, to terpenes (TILDEN), 1878, T., 88.  
 relations of the camphenes obtained from borneol and (KACHLER and SPITZER), 1880, A., 324.  
 identity of the cymenes from oil of turpentine and (PATERNO), 1874, 687.  
 oxygemene from (FLEISCHER and KEKULÉ), 1873, 1228.  
 new method of conversion of, into camphene (DE MONTGOLFIER), 1878, A., 901.

**Camphor**, anisic. See Anethol hydride.

**Camphor** of eubebis (SCHULZE), 1873, 1148; (SCHÄR and WYSS), 1876, i., 942.  
 of *Ledum palustre* (TRAPP), 1875, 1037.  
 patchouli (DE MONTGOLFIER), 1877, i., 478.  
 peppermint. See Menthol under Terpenes.  
 from sage (MUIR), 1880, T., 684.  
 inactive, from inactive camphene, and the action of nitric acid on (ARMSTRONG and TILDEN), 1879, T., 756.  
 isomeric (DE MONTGOLFIER), 1876, ii., 79; 1878, A., 895.  
 synthesis of, by oxidation (BERTHELOT), 1875, 1259.  
**Camphor**, amido- (SCHIFF), 1880, A., 891.  
 bromo- (MAISCH), 1874, 582; (GARLT), 1875, 570; (DE MONTGOLFIER), 1875, 1193; 1878, A., 901; (KACHLER and SPITZER), 1882, A., 864.  
 constitution of (SCHIFF), 1880, A., 892.  
 properties of the bromine-atoms in (SCHIFF), 1882, A., 526.  
 action of zinc chloride on (SCHIFF), 1880, A., 892; 1882, A., 739.  
 dibromo-, isomeric (DE MONTGOLFIER), 1875, 1193; 1878, A., 901; (KACHLER and SPITZER), 1882, A., 864; (v. ZEPHAROVICH), 1882, A., 865; (SWARTS), 1882, A., 1300.  
 properties of the bromine-atoms in (SCHIFF), 1882, A., 526.  
 tribromo- (SWARTS), 1882, A., 1301.  
 bromocyno- (HALLER), 1879, A., 329.  
 bromonitro- (SCHIFF), 1880, A., 891; 1881, A., 438.  
 chloro- (DE MONTGOLFIER), 1878, A., 902.  
 dichloro-, isomeric (DE MONTGOLFIER), 1878, A., 902; (CAZENEUVE), 1882, A., 738, 1107; (CAZENEUVE and DIDELOT), 1882, A., 864.  
 cyano- (HALLER), 1879, A., 329; 1881, A., 1041.  
 iodo- (HALLER), 1879, A., 329.  
 nitro- (SCHIFF), 1880, A., 891.  
 action of bromine and chlorine on (SCHIFF), 1881, A., 438.  
**Camphoramic acid**, action of dehydrating agents on (BALLÓ), 1879, A., 539.  
**Camphor-cymene** (FITTICA), 1875, 59.  
 action of, on the animal organism (ZIEGLER), 1874, 594.

- Camphor-cymene**, oxidation of, in the animal organism (NENCKI and ZIEGLER), 1873, 64.
- Camphor-group**, relation of, to plant life (VOGEL), 1874, 177.
- Camphoric acid** (WREDEN), 1873, 505; (DE MONTGOLFIER), 1878, A., 898; (HALLER), 1881, A., 1042.  
from inactive camphor (ARMSTRONG and TILDEN), 1879, T., 757.  
preparation of (MAISSEN), 1880, A., 893.  
constitution of (WREDEN), 1873, 72; 1877, ii., 446.  
etherification of (MENSCHUTKIN), 1882, A., 384.  
action of dehydrating agents on (BALLÓ), 1879, A., 539.  
action of, on codeine and on morphine (BECKETT and WRIGHT), 1875, 693.  
diethylimidimidine of, and its derivatives, and ethylimide of (WALLACH and KAMENSKI), 1881, A., 284.
- Camphoric acid**, optically inactive (WREDEN), 1873, 1038; 1874, 480.
- meso***Camphoric acid** (WREDEN), 1873, 1038.
- Camphoric anhydride** (DE MONTGOLFIER), 1878, A., 898.  
preparation of (MAISSEN), 1880, A., 893.
- Camphoride**, and its derivatives (JAHNS), 1882, A., 208.
- Camphoronic acid** (DE MONTGOLFIER), 1878, A., 898.
- Camphorophorone** (*camphrene*), constitution of (BALLÓ), 1880, A., 50.
- Camphoterebene** (BALLÓ), 1879, A., 540.
- Camphothymel**. See Thymol.
- Camphrene**. See Camphorophorone.
- Camphyl-**. See Bornyl-.
- Cananga oil** (FLÜCKIGER), 1881, A., 916.
- Cancerite**, chemical composition of (RAUFF), 1879, A., 606.
- Candle-nuts**. See *Aleurites triloba*.
- Candles**, black colouring matter for (BÖTTGER), 1873, 205.  
altered by long exposure to sea-water (GLADSTONE), 1878, A., 660.  
stearin, estimation of paraffin in (DONATH), 1873, 1058.
- Cane sugar**. See Sucrose under Carbohydrates.
- "Canna edulis sterilis,"* as food (CARRIÈRE), 1882, A., 990.
- "Cannell,"* a brown aniline-dye (KNOSP), 1874, 721.
- Cantharene** (PICCARD), 1879, A., 271, 655.
- Cantharic acid** (PICCARD), 1878, A., 233; 1879, A., 270.
- Cantharidin** (RENNARD), 1873, 511; (PICCARD), 1878, A., 233.  
in cantharides, decomposition of (WOLFF), 1877, i., 722.  
derivatives of, and their relation to the ortho-series (PICCARD), 1879, A., 655.
- Caoutchene**. See Dipentene under Terpenes.
- Caoutchouc** (*indiarubber*), origin and exploitation of (ANON.), 1874, 400.  
formation of (BOUCHARDAT), 1880, A., 323.  
manufacture of (HASENCLEVER), 1873, 956.  
influence of heat on the volume of (PUSCHL), 1875, 1156.  
dry distillation of (BOUCHARDAT), 1876, i., 86.  
injurious character of some articles made with (TOLLENS), 1877, i., 240.  
solution (HEEREN), 1877, i., 363.  
preparation of (ANON.), 1874, 1027.  
tubes, effect of, on the illuminating power of coal-gas (ZULKOWSKI), 1873, 300.  
vulcanised, behaviour of, with illuminating gas (VULPIUS), 1879, A., 188.  
preservation of (HEMPEL), 1882, A., 1152.
- joint, annular** (GROVES), 1880, T., 505.  
analysis of (LINDO), 1879, A., 559.
- "Cape tea"* (*Cyclopia Vogelii*) (GREENISH), 1881, A., 441; (CHURCH), 1881, A., 443.
- Capillarity**, coefficient of (GUEROUT), 1877, i., 573.  
of compound ethers (*synapy*) (SCHOLZ), 1873, 587.  
chemical actions in (BECQUEREL), 1874, 1126.  
phenomena produced by molecular attraction in (BECQUEREL), 1873, 1185.  
relations of, to electric phenomena (LIPPMANN), 1873, 1094; 1874, 766.  
in connection with evaporation, cooling effects produced by (DECHARME), 1874, 118, 219.
- Capillary affinity** (CHEVREUL), 1877, i., 166.  
angle and the spreading out of liquids upon solids (QUINCKE), 1878, A., 195.  
tubes, spontaneous ascending movement of liquids in (DECHARME), 1874, 767.

- Capillary** tubes, influence of temperature on the efflux-coefficient of liquids through (GUEROUT), 1875, 329.
- vessels, transudation and diffusion through the walls of (NASSE), 1878, A., 519.
- Capric acid.** See Decoic acid.
- Caproic acid.** See Hexoic acid.
- Caproic aldehyde.** See Hexoic aldehyde.
- Caprolactone.** See Hydroxyhexoic acid, lactone of.
- Caprone.** See Diamyl ketone.
- Caprylic acid.** See Octoic acid.
- Capryl-.** See Octyl-.
- Capsaicin** (THRESH), 1877, i., 720; 1878, A., 233.
- "**Capsicol**" (THRESH), 1878, A., 233.
- Capsules**, gold-lined (SMITH), 1875, 480.
- Caraway oil**, terpene from (TILDEN and SIENSTONE), 1877, i., 560.
- Carbacetoxylic acid**, conversion of  $\alpha$ -dichloropropionic acid into (BECKURTS and OTTO), 1877, ii., 181.
- Carbamic acid**, presence of, in animal fluids (HOFMEISTER), 1876, ii., 318.
- occurrence of, in blood (DRECHSEL), 1876, i., 701.
- metallic salts of (DRECHSEL), 1878, A., 44.
- thio-. See Thiocarbamic acid.
- Carbamide** (STEINER), 1875, 882; (BLANKENHORN), 1878, A., 215.
- pure, preparation of (PFLÜGER), 1880, A., 681.
- synthetical production of, from benzene, ammonia, and air, by the action of heated platinum (HERROUN), 1881, T., 471.
- action of aldehydic and acetic acids on (GRIMAUX), 1877, ii., 741.
- action of alkaline hypobromite on (FOSTER), 1878, T., 470; 1879, T., 122; (FENTON), 1879, T., 12; (ESBACH), 1881, A., 316.
- action of chloro- $\alpha$ -dinitrobenzene on (WILLGERODT), 1877, i., 473; 1878, A., 570.
- and ammonia crenate in spring water (PHIPSON), 1878, A., 754.
- palladium chloride (*palladoso-urammonium chloride*) (DRECHSEL), 1880, A., 161.
- platinochloride (HEINTZ), 1880, A., 104.
- potassium cyanate (BELL), 1876, i., 68.
- silver compound of (MULDER), 1874, 48.
- action of thiocarbamide and carbon disulphide on (PONOMAREFF), 1874, 1088.
- See also Urea.
- Carbamide, thio-.** See Thiocarbamide.
- Carbamides** (MICHLER), 1876, i., 702; ii., 91, 290; (MICHLER and ZIMMERMANN), 1879, A., 935; 1882, A., 182; (MICHLER and ESCHERICH), 1879, A., 934; (MICHLER and KELLER), 1882, A., 182; (KAUFMANN), 1882, A., 183.
- derived from the isomeric toluidines (COSACK), 1880, A., 245.
- simple mode of preparing (WEITH), 1876, ii., 639.
- action of alcoholic ammonia on (CLAUS), 1876, ii., 291.
- action of phosphorus trichloride on (WEITH), 1878, A., 141.
- aldehyde derivatives of (SCHIFF), 1878, A., 668; (LADENBURG), 1878, A., 669.
- Carbamideacetosulphonic acid.** See Acetocarbamidesulphonic acid.
- Carbaminethylphacetic acid.** See Carbamylthioglycollic acid.
- Carbamyl sulphide, thio-** (GUARESCHI), 1878, A., 858.
- Carbamylthioglycollic acid** (CLAËSSON), 1878, A., 38; (NENCKI), 1878, A., 663.
- compound of, with thiocyanacetic acid (CLAËSSON), 1881, A., 715.
- Carbanil.** See Phenyl isocyanate.
- Carbanil-.** See Phenylamidomethenyl-.
- "**Carbanil-ammonaldehyde, thio-**" (SCHIFF), 1877, i., 313.
- Carbanilide.** See *s*-Diphenylcarbamide.
- thio-. See *s*-Diphenylthiocarbamide.
- Carbazole** (GRAEBE), 1880, A., 660.
- synthesis of (GRAEBE), 1873, 1034.
- action of oxalic acid on (SUIDA), 1880, A., 245.
- some derivatives of (CIANICIAN and SILBER), 1882, A., 1103.
- tri-, hexa- and octo-*chloro-, and their reactions (KNECHT), 1880, A., 660.
- tetranitro-* (GRAEBE and v. ADLERSKRON), 1880, A., 660.
- Carbazolecarboxylic acid** (*carbazolic acid*), and its derivatives (CIANICIAN and SILBER), 1882, A., 1103.
- "**Carberins**" (GRIMAUX), 1873, 371.
- Carbethyphenylimide.** See Phenylethylenamide.
- Carbimidacetic acid, thio-** (CLAËSSON), 1878, A., 37.
- Carbimidamidobenzoic acid.** See Guanidodibenzoic acid.
- cyano- (GRIESS), 1879, A., 321, 466.
- Carbimide, thio-.** See Thiocarbimide.
- Carbimidocarbamylbisthioglycollic acid** (CLAËSSON), 1881, A., 715.
- Carbin cyanide.** See Acetonitrile.



**Carbo-*p*-amidotetramidobenzene.** See Tetraphenyltetramidomethane, tetramido.

**Carboazotin**, a new explosive substance (ANON.), 1877, i., 119.

**Carbocinchomeric acid.** See Pyridine-2:3:4-tricarboxylic acid.

**Carbocomenic acid** (DRECHSEL and MÖLLER), 1878, A., 784.

“**Carbodiimide.**” See *iso*Cyanamide.

**Carbodiphenylene.** See Diphenylene ketone.

**Carbodiphenylimide.** See Diphenylcyanamide.

**Carbogluconic acid** (*carboglucosic acid*) (SCHÜTZENBERGER), 1881, A., 1033.

**Carbohydrates** from the chemically combined carbon in cast-iron (ZABUDSKY), 1882, A., 427.

from the tubers of the Jerusalem artichoke (DIECK and TOLLENS), 1879, A., 778; 1880, A., 619.

from *Fucus amylaceus* (GREENISH), 1882, A., 939, 1044.

from fuhling (KELLER), 1877, i., 337.

in milk (RITTHAUSEN), 1877, ii., 519.

and their derivatives, rotatory power of (THOMSEN), 1881, A., 147, 245.

rotatory power of (LANDOLT), 1881, A., 257.

relation between crystalline form and rotatory power of (SCHEIBLER), 1881, A., 245.

behaviour of, towards chromates under the influence of light (EDEK), 1879, A., 911.

in plants, decomposition of, into acids and oxybenzenes (VINES), 1878, T., 386.

physiology of (NASSE), 1877, ii., 503.

as food, determination of the calorific power of (WANKLYN and COOPER), 1878, A., 1013.

and the mode in which they are digested and absorbed (v. BRÜCKE), 1873, 394.

table of the absorption of, in the human intestinal canal (RUBNER), 1880, A., 564.

processes of decomposition which occur in the animal body on feeding with (v. PETTENKOFER and v. VOIT), 1875, 652.

compounds of, with alkalis (PFEIFFER and TOLLENS), 1882, A., 490.

sulphates of (CLAËSSON), 1879, A., 1033; 1880, A., 28.

#### CARBOHYDRATES—

**Amylan**,  $\alpha$ - and  $\beta$ -, constituents of some cereals (O'SULLIVAN), 1882, T., 24.

#### CARBOHYDRATES—

**Amylum.** See Starch under Carbohydrates.

**Paramylum**, oxidation-products of (HABERMANN), 1874, 1077.

**Arabin** (*arabic acid*), presence of, in the sugar-beet (SCHEIBLER), 1873, 1124.

**Metarabin** (GREENISH), 1881, A., 443.

**Pararabin** (REICHARDT), 1875, 1179.

**Arabinose** (SCHEIBLER), 1873, 1124; (CLAËSSON), 1881, A., 795; 1882, A., 819; (KILIANI), 1882, A., 591.

identity of, with lactose (KILIANI), 1881, A., 243.

**Bast fibres**, chemistry of (CROSS and BEVAN), 1880, A., 666; 1881, A., 1121; 1882, T., 90.

**Berginitol** (*bergenin*) and its derivatives (MORELLE), 1882, A., 159.

**Brain-sugar.** See Cerebrose under Carbohydrates.

**Cane-sugar.** See Sucrose under Carbohydrates.

**Cellulose** (FREMY), 1877, i., 229.

and coal (BEVAN and CROSS), 1882, A., 31.

production of, in vegetation (DURIN), 1877, i., 106.

manufacture (FAUDEL), 1876, ii., 231.

certain properties of (FREMY and URBAIN), 1882, A., 420.

action of a mixture of acetic anhydride and sulphuric acid on (FRANCHIMONT), 1880, A., 159.

action of gaseous hydrochloric, hydrobromic, hydriodic or hydrofluoric acid on (GIRARD), 1879, A., 779.

action of sulphuric acid on (TERRELL), 1873, 370.

behaviour of, with the alkaline earths (WEISKE), 1876, ii., 662.

nitration of (VIELLE), 1882, A., 1184.

supposed transformation of, into gum in plants (MERCADANTE), 1876, i., 954.

digestion of (HOFMEISTER), 1882, A., 237; (TAPPEINER), 1882, A., 985.

digestion of, by geese (WEISKE and MEHLIS), 1878, A., 905; (WEISKE), 1880, A., 330.

acetic derivatives of (FRANCHIMONT), 1881, A., 709.

a hydrated derivative of (GIRARD), 1876, i., 696.

## CARBOHYDRATES—

- Cellulose**, detection of, by means of phloroglucinol (v. WAGNER), 1878, A., 809.  
 estimation of (KÖNIG), 1873, 534; 1874, 497; (KRAUCH), 1880, A., 761.  
*trinitrate*, solution of stannous oxide in caustic soda as a reducing agent for (BÖTTGER), 1874, 1078.  
 nitrates (WOLFRAM), 1879, A., 218, 371; (EDER), 1880, A., 372.  
 See also Guncotton and Pyroxylin.  
**Hydrocellulose**, and its derivatives (GIRARD), 1876, i., 696; 1879, A., 779; 1882, A., 378.  
 conversion of, into pyroxylin, and its nitrification (GIRARD), 1879, A., 911.  
**Metacellulose** (*fungin*) and paracellulose (FREMY), 1877, i., 229.  
**Cerebrose** (*brain-sugar*) (THUDICHUM), 1882, A., 537.  
 See also Galactose.  
**Cutose** (FREMY), 1877, i., 230.  
 certain properties of (FREMY and URBAIN), 1882, A., 420.  
**Dextran** (BUNGE), 1879, A., 912; (VAN TIEGHEM), 1880, A., 908; (BÉCHAMP), 1881, A., 1024.  
**Dextrin** (BONDONNEAU), 1875, 247.  
 in the cells of plants (VINES), 1878, T., 383.  
 occurrence of, in urine (REICHARDT), 1876, i., 410.  
 conversion of glucose into (MUSCULUS and MEYER), 1881, A., 570.  
 modifications of (v. BRÜCKE), 1873, 394.  
 action of nitric and sulphuric acids on (LUSTGARTEN), 1882, A., 160.  
 action of diastatic ferments on (v. MERING), 1882, A., 749.  
 schizomycetic fermentation of (FITZ), 1877, ii., 214.  
 alkali-compounds of (PFEIFFER and TOLLENS), 1882, A., 491.  
 detection of, in gum arabic (HAGER), 1874, 715.  
 estimation of (HAGER), 1873, 534; (KRATSCHMER), 1882, A., 558.  
 estimation of glucose and, in fermented liquids (BÉCHAMP), 1876, i., 762.  
 separation of, from starch (v. BRÜCKE), 1873, 394.  
**α-Dextrin** (BROWN and HERON), 1879, T., 640; (O'SULLIVAN), 1879, T., 772.

## CARBOHYDRATES—

- Acetylachroodextrin**, **acetylerythrodextrin** and **acetylmaltodextrin** (HERZFELD), 1880, A., 620.  
**Achroodextrin** (v. BRÜCKE), 1873, 394; (MUSCULUS and GRUBER), 1878, A., 778; (O'SULLIVAN), 1879, T., 777.  
 changes which it undergoes in the animal organism (BIMMERMAN), 1880, A., 678.  
**Amylodextrin**, sodium compound of (PFEIFFER and TOLLENS), 1882, A., 491.  
 See also Starch-cellulose.  
**Erythrodextrin** (v. BRÜCKE), 1873, 394; (MUSCULUS and GRUBER), 1878, A., 778; (BROWN and HERON), 1879, T., 640; (MUSCULUS and MEYER), 1881, A., 570.  
**Maltodextrin** (HERZFELD), 1880, A., 311, 866; 1881, A., 1024.  
**Dextrins** (O'SULLIVAN), 1879, T., 771.  
 from amylaceous substances (BONDONNEAU), 1876, i., 365.  
**Dextrose** (*d-glucose*; *grape-sugar*) (HÖNIG and ROSENFELD), 1877, ii., 303; (MUSCULUS and GRUBER), 1878, A., 778; (HESSE), 1878, A., 851.  
 crystallised (HALSE and STEINER), 1877, ii., 730.  
 crystallised anhydrous (BEHR), 1882, A., 706.  
 occurrence of, in alcohol (SALOMON), 1877, i., 705.  
 from amylaceous substances (BONDONNEAU), 1876, i., 365.  
 in beet roots (KRAUSE), 1874, 1015.  
 formation of, from cellulose, glycerol and gum (KOSMANN), 1877, ii., 876; (LIEBERMANN), 1878, A., 287.  
 in catech (PAUL and KINGZETT), 1878, T., 219.  
 of oak-bark tannin (BÖTTINGER), 1881, A., 1021; 1882, A., 157.  
 from populin (v. LIPPMANN), 1880, A., 29.  
 from starch (RÖHR), 1880, A., 932; (ALLIHN), 1881, A., 149, 770; (SOXHLET), 1882, A., 30.  
 a product of the action of malt-extract on starch? (BROWN and HERON), 1879, T., 648.  
 a normal constituent of the urine? (KÜLZ), 1876, ii., 647.  
 change of glycerol into (KOSMANN), 1877, ii., 876; (LIEBERMANN), 1878, A., 287.

## CARBOHYDRATES—

- Dextrose** (*d-glucose*; *grape-sugar*), transformation of glycogen into, by saliva and pancreatic ferment (SEEGEN), 1877, ii., 911; 1879, A., 548.
- transformation of saccharose into, in the operations of sugar refining (GIRARD), 1876, ii., 680.
- conversion of cane-sugar into, by the action of light (RAOULT), 1873, 490.
- preparation of (SCHWARZ), 1873, 265, 370; (NEUBAUER), 1877, i., 705; (SOXHLET), 1882, A., 1274; (WORM-MÜLLER), 1882, A., 1275.
- preparation of, from starch (DELA RUE), 1882, A., 1146.
- preparation of, and its titration with Knapp's solution (OTTO), 1882, A., 1276.
- supposed synthesis of (VALENTE), 1881, A., 242.
- rotatory power of (TOLLENS), 1876, ii., 284; 1877, i., 265; (HOPPE-SEYLER), 1876, ii., 553.
- electrolysis of (RENARD), 1880, A., 27.
- some properties of (PELIGOT), 1880, A., 232.
- action of sodium hypobromite on (ESBACH), 1881, A., 316.
- decomposition of, by alkalis (NENCKI and SIEBER), 1882, A., 378.
- fermentation of (BOUTROUX; MAUMENÉ), 1880, A., 863.
- reduction of cupric oxide by, in neutral solutions (WORM-MÜLLER and HAGEN), 1882, A., 558.
- reducing power of, for Fehling's solution (DEGENER), 1882, A., 104.
- reducing substance formed by the action of potassium hydroxide on (EMMERLING and LOGES), 1882, A., 490.
- reduction of selenious, telluric and tellurous acids by (STOLBA), 1874, 872.
- transformation of, into alcohol (BERTHELOT), 1879, A., 778.
- experiments to demonstrate the conversion of, when added to fermenting must and marc of grapes (BOUSSINGAULT), 1877, i., 358.
- conversion of, into dextrin (MUSCULUS and MEYER), 1881, A., 570.
- influence of salts and, on the crystallisation of sugar (DURIN), 1876, i., 761.

## CARBOHYDRATES—

- Dextrose** (*d-glucose*; *grape-sugar*), arsenic in (CLOÛET; RITTER), 1879, A., 1077.
- derivatives of levulose and (FRANCHIMONT), 1877, ii., 583.
- compound of, with copper (FILETI), 1875, 630.
- compounds of, with cupric hydroxide (WORM-MÜLLER and HAGEN), 1878, A., 967; (SALKOWSKI), 1879, A., 778.
- compounds of, with cupric oxide and potassium (WORM-MÜLLER and HAGEN), 1878, A., 968.
- compound of, with sodium chloride (SCHEIBLER), 1873, 265.
- detection of (CAMPANI), 1873, 534; (MAZZARA), 1878, A., 686.
- and other reducing substances, test for (POLLACCI), 1878, A., 685.
- value of cupric acetate and formate as a delicate test for (WORM-MÜLLER), 1878, A., 531.
- titration of, in presence of cane-sugar (CHAMPION and PELLET), 1875, 666.
- detection of, in presence of dextrin and other allied compounds (BARFOED), 1873, 1163.
- test for, in urine (LINDO), 1878, A., 1012.
- detection of wines sophisticated with. See Wines.
- detection and estimation of (SOLDAINI), 1877, i., 345.
- Böttger's test for (v. BRÜCKE), 1876, ii., 116; (MASCHKE), 1877, ii., 930.
- estimation of (MERTENS), 1873, 1059; (MOHR), 1874, 292; (MACAGNO), 1874, 714; (GRATAMA), 1878, A., 611; (MÄRCKER), 1879, A., 180; (BATTANDIER), 1880, A., 512.
- estimation of, by Barreswil's, Fehling's, Trommer's, etc. tests (MISSAGHI), 1876, i., 965.
- estimation of, by Pavy's method (HEHNER), 1879, A., 834.
- estimation of, with special reference to R. Sachsse's method (STROMMER and KLAUSS), 1878, A., 246.
- estimation of levulose and, by an indirect method (NEUBAUER), 1877, ii., 641.
- a new copper solution for the estimation of (PELLET), 1878, A., 612.
- estimation of, in blood (CAZENEUVE), 1879, A., 557.

## CARBOHYDRATES—

**Dextrose** (*d-glucose*; *grape sugar*), estimation of, in blood by Bernard's method (PICARD), 1879, A., 674. estimation of dextrin and, in fermented liquids (BÉCHAMP), 1876, i., 762. estimation of, in presence of saccharose (HEINRICH), 1879, A., 180. estimation of, in urine (STROHL), 1876, i., 111; (CARNELUTTI and VALENTE), 1881, A., 315. estimation of, in wine or must (MACAGNO), 1875, 484. estimation of mercury and of (HAGER), 1878, A., 216.

**Octacetylglucose** (FRANCHIMONT), 1880, A., 159; (HERZFELD), 1880, A., 619.

**Drupose** (CROSS and BEVAN), 1882, T., 106.

**Dulcitol** (*dulcite*) (BOUCHARDAT), 1873, 160.

action of phosphorus *pentachloride* on (BELL), 1879, A., 917.

action of potassium *permanganate* on a neutral solution of (FUDAKOWSKI), 1877, ii., 877.

fermentation of (FITZ), 1878, A., 242.

identity of hexyl compounds from mannitol and (HECHT), 1873, 370; 1878, A., 717.

*iso***Dulcitol** (*rhamnose*; *rhamnodulcite*) (LIEBERMANN and HOERMANN), 1879, A., 39; (BEREND), 1879, A., 40; (HOFFMANN), 1879, A., 468.

action of hydrogen iodide on (DALE and SCHORLEMMER), 1878, A., 969.

sodium derivative of (LIEBERMANN and HAMBURGER), 1879, A., 946.

*d*-**Fructose**. See Levulose.

**Fruit-sugar**. See Levulose.

"**Erythramylum**" (v. BRÜCKE), 1873, 395.

**α-Galactan** in the grain of *Soja hispida* (LEVALLOIS), 1880, A., 796; 1881, A., 1121.

**Galactin** (MÜNTZ), 1882, A., 707.

**Galactose** (FUDAKOWSKI), 1875, 879; 1876, i., 697; 1877, ii., 877; 1878, A., 777; 1879, A., 137.

See also Cerebrose.

**Pentacetylgalactose** (FUDAKOWSKI), 1878, A., 777.

**Gelose** (HEILMANN), 1876, i., 981; (MORIN), 1881, A., 403; (GREENISH), 1882, A., 1044.

**Glucosamine** (*glycosamine*) hydrochloride (LEDDEHROSE), 1877, i., 64.

## CARBOHYDRATES—

*d*-**Glucose**. See Dextrose.

**Glucose**, inactive (GAYON), 1879, A., 97; 1880, A., 458; (HOESIN-DEON), 1880, A., 100, 458.

transformation of the crystallisable sugar of brown sugar into (GAYON), 1877, ii., 303.

**Glucoses**, consecutive alteration of, formed by the inversion of cane-sugar (DURIN), 1879, A., 369.

**Glycogen** (BERNARD), 1878, A., 82; (KÜLZ), 1881, A., 570; (PAVY), 1882, A., 322.

origin and accumulation of, in the animal organism (WOLFFBERG), 1877, i., 484.

formation of, in the bodies of animals (FORSTER), 1877, ii., 204.

dissemination of, in the animal organism (ABELES), 1877, ii., 204.

formation of, in certain marine animals (PICARD), 1876, i., 949.

from the human bile (KÜLZ), 1876, ii., 646.

does, occur in the blastoderm of the chick? (KÜLZ), 1881, A., 629.

sources of, in the liver (WEISS), 1874, 594.

formation of, in the liver (v. MERING), 1877, i., 728; (MAYER), 1878, A., 905; (KÜLZ), 1881, A., 626.

in the livers of hibernating animals (KÜLZ), 1881, A., 629.

in the liver, influence of severe bodily exercise, and influence of cold on the amount of (KÜLZ), 1881, A., 626.

influence which the tying of the *ductus choledochus* exerts upon the amount of, in the liver (KÜLZ and FRERICHS), 1877, i., 221.

amount of, in the liver and muscles after death (KÜLZ), 1881, A., 628.

does injection of sodium carbonate into the portal vein cause the disappearance of, from the liver? (KÜLZ), 1881, A., 627.

formation of, in muscle (KÜLZ), 1881, A., 629.

in the muscular tissue of *Pecten irradians* (CHITTENDEN), 1875, 1275.

elementary composition of (KÜLZ and BORSTRÄGER), 1881, A., 569; (ABELES), 1882, A., 491.

specific rotatory power of (KÜLZ), 1881, A., 569.



## CARBOHYDRATES—

**Glycogen**, action of the acids of the liver on (SEEGEN and KRATSCHEMER), 1880, A., 906.

action of diastase, saliva, and pancreatic juice on (MUSCULUS and v. MEHING), 1879, A., 370.

transformation of, into sugar by saliva and pancreatic ferment (SEEGEN), 1877, ii., 911; 1879, A., 548.

action of mineral acids on (KÜLZ and BORNTÄGER), 1881, A., 569.

action of potash solutions on (v. VINTSCHGAU and DIETL), 1876, ii., 622; 1878, A., 850.

product of the oxidation of, with bromine, silver oxide, and water (CHITTENDEN), 1877, i., 64.

precipitation of (KÜLZ), 1882, A., 1043.

estimation of (KÜLZ), 1881, A., 655; (KRATSCHEMER), 1882, A., 558.

**Achrooglycogen** from the mucin of *Helix pomatia* (LANDWEHR), 1882, A., 708.

**$\beta$ -Glycogen-dextrin** (v. VINTSCHGAU and DIETL), 1878, A., 851.

**Glycogen-maltose** (KÜLZ), 1881, A., 567.

**"Glycogen, nitro-"** (LUSTGARTEN), 1882, A., 159.

**Granulose** (BROWN and HERON), 1879, T., 610.

**Grape-sugar**. See Dextrose.

**Gums**. See Gum.

**Gun-cotton**. See Gun-cotton.

**Hesperidin-sugar**. See *iso*Dulcitol.

**Inactose**, preparation of (MAUMENÉ), 1882, A., 490.

**Inosite** (*nucite*) from the leaves of the walnut (TANRET and VILLIERS), 1877, ii., 304.

muscular, identity of, and vegetable sugars of the same composition (TANRET and VILLIERS), 1878, A., 399.

chemical function of (LORIN), 1878, A., 393.

and its action on Fehling's solution, and action of nitric acid on (TANRET and VILLIERS), 1881, A., 1022.

paralactic acid from (VOHL), 1876, ii., 400.

*tri-* and *hexa-*nitrate (VOHL), 1874, 463.

**Inulin** (KILIANI), 1881, A., 243.

## CARBOHYDRATES—

**Inulin**, identity of, from different sources (LESCŒUR and MORELLE), 1878, A., 970; (LEFRANC), 1881, A., 149.

from the Jerusalem artichoke (DIECK and TOLLENS), 1879, A., 778; 1880, A., 619.

fermentation of (FITZ), 1878, A., 241.

action of chlorosulphonic acid on (CLAËSSON), 1879, A., 1035.

alkali-compounds of (PFEIFFER and TOLLENS), 1882, A., 491.

**Invert-sugar** (MAUMENÉ), 1875, 1179; (HORSIN-DÉON), 1880, A., 100, 458.

in vine leaves (PETIT), 1874, 244.

preparation of (ANON.), 1879, A., 187; (MAUMENÉ, CAIL and Co.), 1880, A., 425.

some properties of (v. LIPTMANN), 1881, A., 148.

specific rotatory power of (ALLEN), 1881, A., 653; (WATT), 1881, A., 654.

influence of temperature on the deviation of polarised light by solutions of (CASAMAJOR), 1879, A., 832.

action of potassium *permanganate* on (BORODULIN), 1874, 244.

estimation of, in presence of saccharose (HEINRICH), 1879, A., 180.

**Lactose** (*milk sugar*) (MILLS and HOGARTH), 1880, A., 458.

anhydrous (ERDMANN), 1881, A., 151; (SCHMOEGER), 1882, A., 157.

identity of, with arabinose (KILIANI), 1881, A., 243.

crude and refined, preparation of (EUGLING and RÜF), 1882, A., 1014.

partial synthesis of (DEMOLE), 1880, A., 29.

a hitherto unobserved property of (SCHMOEGER), 1881, A., 151.

specific rotatory power of (MEISSEL), 1881, A., 150.

action of potassium *permanganate* on (LAUBENHEIMER), 1873, 46.

action of dilute sulphuric acid on, lactoglucose and galactose obtained by the (FUDAKOWSKI), 1877, ii., 877.

fermentation of (FITZ), 1878, A., 241; (RICHTER), 1878, A., 567.

oxidation of, by silver oxide (KILIANI), 1881, A., 243.

## CARBOHYDRATES—

- Lactose** (*milk sugar*), reduction of cupric oxide by (RODEWALD and TOLLENS), 1879, A., 217.  
 ethereal nitrates from (GE), 1882, A., 1042.  
 nitrogenous compounds of (KERN), 1874, 1078.  
 two sugars obtained from (FUDAKOWSKI), 1875, 879.  
 sodium derivative of (HÖNIC and ROSENFELD), 1879, A., 449.  
 detection of (CAMPANI), 1873, 534.  
 estimation of, in milk (GSCHIEDLÉN), 1878, A., 345.
- Octacetylactose** (HERZFELD), 1880, A., 619.
- Levulan** (CLAËSSON), 1882, A., 819.  
 from beet-root molasses (v. LIPP-MANN), 1881, A., 888.
- Levulin** (*synanthrose*) (MÜNTZ), 1879, A., 337.  
 from the Jerusalem artichoke (DIECK and TOLLENS), 1879, A., 778; 1880, A., 619.  
 in oak-bark (ETTI), 1882, A., 158.  
 natural, preparation of (LEFRANC), 1881, A., 149.
- ↓ **Levulin** (LEFRANC), 1881, A., 149.
- Levulose** (*fruit-sugar; d-fructose*) (JUNGFLEISCH and LEFRANC), 1882, A., 158; (CLAËSSON), 1882, A., 819.  
 from couch-grass root (MÜLLER), 1874, 39, 170.  
 reduction of (KRUSEMAN), 1877, i., 293.  
 estimation of dextrose and, by an indirect method (NEUBAUER), 1877, ii., 641.  
 derivatives of dextrose and (FRANCHIMONT), 1877, ii., 583.  
 compound of, with lime (PELIGOT), 1880, A., 539.  
 sodium-derivative of (HÖNIC and ROSENFELD), 1879, A., 449.
- Lignose**, preparation of oxalic acid from (THORN), 1874, 297.
- Maltose** (SCHULZE), 1875, 347; (O'SULLIVAN), 1876, i., 478; 1879, T., 771; (MUSCULUS and GREBER), 1878, A., 778; (MUSCULUS and v. MERING), 1879, A., 370; (KÜLZ), 1881, A., 567; (YOSHIDA), 1881, A., 568; (MEISSL), 1882, A., 818.  
 in beer mash (SCHULTZE), 1880, A., 776.  
 specific rotatory power of (BROWN and HERON), 1879, T., 618; (SUNDVIK), 1882, A., 707; (MEISSL), 1882, A., 818.

## CARBOHYDRATES—

- Maltose** solution, density of (BROWN and HERON), 1879, T., 618.  
 action of diastatic ferments on (v. MERING), 1882, A., 749.  
 action of malt-extract and of dilute sulphuric acid on, and the cupric oxide reducing power of (BROWN and HERON), 1879, T., 619.  
 oxidation of (YOSHIDA), 1881, A., 568.  
 changes which, undergoes in the animal organism (BIMMERMANN), 1880, A., 678.
- Octacetylmaltose** (HERZFELD), 1880, A., 620.
- Mannitol**, and its nitrate (VIGNON), 1875, 53.  
 chlorhydrin (BOUCHARDAT), 1873, 161.
- Tetracetylmannitan** (BOUCHARDAT), 1873, 1124.
- Mannitol**, and its derivatives (BOUCHARDAT), 1873, 1123; (VIGNON), 1875, 52; (CLAËSSON), 1882, A., 819.  
 from Fungi (MÜNTZ), 1873, 759; 1875, 380.  
 as a bye-product in the formation of lactic acid from cane-sugar (DRAGENDORFF), 1880, A., 100.  
 optical properties of (MÜNTZ and AUBIN), 1877, i., 294, 589.  
 rotatory power of (VIGNON), 1874, 245; 1875, 53; (BOUCHARDAT), 1875, 443; 1877, i., 449.  
 electrolysis of (RENARD), 1880, A., 26.  
 action of phosphorus pentachloride on (BELL), 1879, A., 917.  
 action of water on, in sealed tubes at different temperatures (VIGNON), 1875, 54.  
 fermentation of (FITZ), 1877, ii., 214; 1878, A., 241.  
 oxidation of, by an alkaline solution of potassium permanganate (HECHT and IWIG), 1882, A., 157.  
 neutral compounds derived from (BOUCHARDAT), 1873, 160, 747, 1123.  
 identity of hexyl compounds from dulcitol and (HECHT), 1873, 370; 1878, A., 717.  
 hexylene from (HECHT and STRAUSS), 1874, 782; (DOMAC), 1881, A., 1113.  
 nitrate, preparation of (SOKOLOFF), 1879, A., 777.  
 heat of formation of (SARRAU and VIEILLE), 1881, A., 969.

## CARBOHYDRATES—

- Mannitol** nitrate, explosion of (SOKOLOFF), 1879, A., 1080.
- Matezite.** See  $\beta$ -Pinite.
- Melezitose**, researches on (VILLIERS), 1877, i., 451.
- Melitose** (*melitriose*). See Raffinose.
- Milk-sugar.** See Lactose.
- Nucite.** See Inosite.
- Pectic acid**, calcium salt of (FREMY), 1877, i., 230.
- Pectin-group** (REICHARDT), 1877, ii., 502.
- Pectose** (FREMY), 1877, i., 230.  
certain properties of (FREMY and URBAIN), 1882, A., 420.
- $\beta$ -Pinite** (*matezite*), a volatile sugar obtained from Madagascar caoutchouc (GIRARD), 1874, 169.
- Quercitol** (HOMANN), 1878, A., 399.  
in oak-bark (ETTI), 1882, A., 158.  
preparation and properties of (PRUNIER), 1879, A., 239.  
constitution of (HOMANN and WISLICHENUS), 1876, i., 371.  
physical properties of (PRUNIER), 1878, A., 131.  
action of heat on (PRUNIER), 1877, i., 450.  
action of hydriodic acid on (PRUNIER), 1876, ii., 398.  
action of hydrobromic and hydriodic acids on (PRUNIER), 1879, A., 241.  
action of phosphorus *pentachloride* on (BELL), 1879, A., 917.  
action of potassium hydroxide on (PRUNIER), 1878, A., 778.  
fermentation of (FITZ), 1878, A., 242.  
acetates (PRUNIER), 1877, ii., 877; 1878, A., 212; 1879, A., 240; (HOMANN), 1878, A., 399.  
butyrates (PRUNIER), 1877, ii., 877; 1878, A., 212; 1879, A., 241.  
brom- and chlor-hydrins (PRUNIER), 1878, A., 400; 1879, A., 241.  
*pentanitrate* (HOMANN), 1878, A., 400.
- Raffinose** (*melitose*; *melitriose*), a new crystalline organic substance (LOISEAU), 1876, ii., 397.
- Rhamnodulcitol** and **rhamnose.** See *iso*Dulcitol under Carbohydrates.
- Saccharin** (PELIGOT), 1880, A., 232, 620; (BERTHELOT), 1880, A., 233; 1881, A., 567; (SCHEIBLER), 1881, A., 149; (KILIANI), 1882, A., 820.  
presence of, in osmosed sugar (V. LIPPMANN), 1881, A., 148.

## CARBOHYDRATES—

- Saccharose.** See Sucrose under Carbohydrates.
- Sinistrin** from the squill (*Urginea scilla*) (SCHMIEDEBERG), 1879, A., 779.
- Sorbinose** (*sorbin*) (VINCENT), 1881, A., 148.
- d-Sorbitol** (*sorbite*) and its derivatives (VINCENT), 1881, A., 148.  
action of phosphorus *pentachloride* on (BELL), 1879, A., 917.
- Starch** from cacao (TROJANOWSKY), 1877, ii., 363.  
formation of, in chlorophyll-granules (BÖHM), 1876, i., 953.  
formation of, in chlorophyll-grains in absence of light (BÖHM), 1879, A., 551.  
formation of, in the cotyledons of cress, radishes and flax (BÖHM), 1876, i., 952.  
formation of, in plants (DEBÉRAIN and MAQUENNE; DETMER), 1882, A., 640.  
formation of, in the cells of plants (BÖHM), 1878, A., 84.  
in potato, influence of manure on (MÄRCKER), 1880, A., 915.  
relation between the quantity of, in potatoes, and their relative density, and a new table for calculating the percentage of starch in potatoes from their specific gravity (HEIDEPRIEM), 1877, ii., 233.  
loss of, occasioned by the sprouting of potatoes (KRAMER), 1882, A., 242.  
modification of, in vegetables (MERCADANTE), 1877, i., 104.  
manufacture of, alcohols formed in the (BOUCHARDAT), 1874, 883.  
elementary composition of (SALOMON), 1882, A., 1183.  
soluble (MUSCULUS), 1874, 1077, 1174; (BONDONNEAU), 1875, 629; (BROWN and HERON), 1879, T., 615; (O'SULLIVAN), 1879, T., 772; (ZULKOWSKI), 1880, A., 865.  
action of potash on (BROWN and HERON), 1879, T., 617.  
See also Starch-cellulose.
- nature and properties of (BROWN and HERON), 1879, T., 610.
- modifications of the physical properties of (MUSCULUS), 1879, A., 518; 1881, A., 888.
- optical properties of (BAILY), 1877, i., 294.

## CARBOHYDRATES—

- Starch**, fermentation of (FITZ), 1877, ii., 214; 1878, A., 241; (MARCANO), 1882, A., 1311.
- action of diastatic ferments on (v. MERING), 1882, A., 749.
- action of diastase on (MUSCULUS and GRUBER), 1878, A., 778; (MÄRCKER), 1878, A., 969; (BASWITZ), 1878, A., 903; 1880, A., 132.
- action of diastase on, in presence of hydrochloric acid or pure gastric juice (DEFRESNE), 1880, A., 330.
- action of diastase, saliva and pancreatic juice on (MUSCULUS and v. MERING), 1879, A., 370.
- from different sources, differences in the diastatic reactions of (DOBROSLAWIN), 1877, i., 453.
- action of ptyalin on, in presence of gastric juice (DEFRESNE), 1880, A., 330.
- action of saliva on (WATSON), 1879, T., 541.
- action of saliva on different kinds of (LEFBERG and GEORGIEFSKI), 1876, ii., 398.
- action of glycerol on (ZULKOWSKI), 1880, A., 865.
- action of malt-extract on (O'SULLIVAN), 1876, ii., 125; (BROWN and HERON), 1879, T., 621.
- is dextrose a product of the action of malt-extract on? (BROWN and HERON), 1879, T., 648.
- action of malt-extract on the transformed products of (O'SULLIVAN), 1879, T., 778.
- action of nitrogen iodide on (HUSON), 1873, 46.
- influence of steaming on (STUMPF), 1880, A., 834.
- action of sulphuric acid or diastase on (MUSCULUS and GRUBER), 1878, A., 778.
- oxidation products of (HABERMANN), 1874, 1077.
- saccharification of (HERZFELD), 1880, A., 866.
- conversion of, into sugar by the action of dilute sulphuric acid at high temperatures (ALLHN), 1881, A., 149, 770.
- supposed conversion of, into sugar by water at a high temperature (SOXHLET), 1882, A., 30.
- production of sugar from (RÖHR), 1880, A., 932.
- and its transformations (BROWN and HERON), 1879, T., 596.

## CARBOHYDRATES—

- Starch**, transformation-products of (O'SULLIVAN), 1879, T., 770.
- alkali-compounds of (TOLLENS), 1874, 245, 565; (PFEIFFER and TOLLENS), 1882, A., 490.
- influence of, on the solubility of albumin (ROTHER), 1873, 919.
- digestion of boiled (v. BRÜCKE), 1873, 395.
- changes which, undergoes in the animal organism (BIMMERMANN), 1880, A., 677.
- and iodine reaction (PUCHOT), 1877, i., 107.
- iodine reactions during the transformation of, with malt-extract (BROWN and HERON), 1879, T., 641.
- analysis of (SALOMON), 1882, A., 339.
- estimation of (KRATSCHMER), 1882, A., 558.
- estimation of, in paper (WURSTER), 1879, A., 180.
- estimation of, in potatoes (SIEWERT), 1880, A., 512; (BEHREND, MÄRCKER and MORGEN), 1880, A., 513.
- estimation of, in sausages (MEDICUS and SCHWAB), 1879, A., 979; (FRICKHINGER), 1880, A., 826.
- estimation of, in pressed yeast (HAYDUCK), 1881, A., 943.
- separation of, from dextrin (v. BRÜCKE), 1873, 394.
- Starch-cellulose**, nature and properties of (BROWN and HERON), 1879, T., 610.
- See also Amylodextrin and Starch, soluble.
- Starch-dextrose**, specific rotatory power of (BROWN and HERON), 1879, T., 620.
- Starch-grains** in chlorophyll-corpuscles (VINES), 1878, T., 376.
- structure of (MEYER), 1882, A., 1122.
- formation and growth of (SCHIMPER), 1881, A., 1061.
- growth of, by intussusception (v. NÄGELI), 1882, A., 761.
- Starch-group** (NÄGELI), 1875, 55.
- Starch iodide** (SONSTADT), 1874, 352; (BONDONNEAU), 1878, A., 22.
- Starch-paste**, and its optical activity (BROWN and HERON), 1879, T., 616.
- action of diastase on (HERZFELD), 1880, A., 310; 1881, A., 1024.
- action of malt extract on (BROWN and HERON), 1879, T., 626.



## CARBOHYDRATES—

**Starch-paste**, action of potash on (BROWN and HERON), 1879, T., 616.

prevention of mould in (HIRSCHBERG), 1873, 100.

**Maize-starch**, preparation of (ANON.), 1881, A., 330.

**Potato-starch**, physico-chemical changes produced in, by boiling (MAGERSTEIN), 1882, A., 422.

tenacity of (WHEWELL), 1879, A., 570.

best means of utilising the waste water in the manufacture of (ANON.), 1877, ii., 943.

feculometer for testing (CLOËZ), 1874, 1015; (BONDONNEAU), 1875, 385.

**Rice-starch** manufacture, present state of (ADLUNG), 1876, ii., 675; 1877, i., 363.

paste from (ANON.), 1873, 1072.

**Sucrose** (*saccharose*; *cane-sugar*), distribution of mineral matters and, in beet-root (VIOLETTE), 1875, 376.

in beet-roots in relation to mineral and nitrogenous matter (PELLET), 1880, A., 569.

proportion of, to the weight of beet-roots (FELTZ and BRIEM), 1880, A., 519.

ratio of, in the beet to the phosphoric acid in the root and leaves (PELLET), 1879, A., 818.

in beet, influence of superphosphates on the percentage of (JACQUEMART), 1882, A., 1314.

presence of, in the leaves of beet (CORENWINDER), 1877, i., 336; (PIERRE), 1877, i., 487; (CORENWINDER and CONTAMINE), 1880, A., 336.

influence of leaves in the production of, in the beet (CORENWINDER and CONTAMINE), 1878, A., 997.

amount of, in the roots of sugar-beet (SCHULZE), 1880, A., 586.

occurrence of crystallisable, in germinating cereals (KÜHNEMANN), 1875, 779.

from the stems of maize and sorghum (COLLIER), 1880, A., 834; 1881, A., 634.

distribution of, in sorghum (MEUNIER), 1881, A., 60.

amount of, in sorghum, maize, and melons (GOESSMANN), 1880, A., 594.

## CARBOHYDRATES—

**Sucrose** (*saccharose*; *cane-sugar*) in vine leaves (PETIT), 1874, 244.

in vines suffering from phylloxera (GAYON and MILLARDET), 1879, A., 1049.

synthesis of (DEMOLE), 1880, A., 29.

rotation constants of (THOMSEN), 1881, A., 1023.

specific rotatory power of (TOLLENS), 1877, ii., 875; 1879, A., 136, 557; (PELLET), 1878, A., 22; (ALLEN), 1881, A., 653.

specific rotation of, in different solvents (TOLLENS), 1881, A., 243; 1882, A., 30.

optical rotatory power of, in alkaline solutions (THOMSEN), 1881, A., 1023.

different rotatory powers exhibited by, according to the mode of measurement adopted (CALDERON), 1876, ii., 427.

influence of salts on the polarisation of solutions of (KOHLE-RAUSCH), 1873, 92; (MÜNTZ), 1876, ii., 552.

pure, dialysis of (SCHWARZ), 1878, A., 179.

hemimorphism of (BAUMHAUER), 1875, 38.

crystallisation of (FLOURENS), 1876, ii., 679; (WEITZ), 1879, A., 844.

changes which it undergoes in crystallising (FLOURENS), 1882, A., 122.

influence of salts and glucose on the crystallisation of (DURIN), 1876, i., 761.

action of mineral salts on the crystallisation of, and the determination of their coefficients (LAGRANGE), 1876, i., 805.

influence of light on the yield of, in beets (BRIEM), 1879, A., 1047.

behaviour of, under the influence of light (KREUSLER), 1875, 748.

effects of heat on, in aqueous solution (LOUND), 1877, i., 450; (MOTTEU), 1879, A., 911.

vitreous fused (MORIN), 1878, A., 657.

solubility of (COURTONNE), 1878, A., 21.

ulmic compounds formed from, by the action of acids (SESTINI), 1880, A., 538.

action of bone-black on solutions of (CASAMAJOR), 1880, A., 758.

## CARBOHYDRATES—

- Sucrose** (*saccharose*; *cane-sugar*),  
 action of bromine on (GRIESHAMMER), 1880, A., 795; (REICHARDT), 1880, A., 864.  
 action of lime on solutions of (LAMY), 1877, i., 116; (DESOR), 1880, A., 834.  
 action of an alkaline copper solution on, and on mixtures of cane- and grape-sugars (SCHEIBLER), 1873, 193.  
 action of crystallisable, on Fehling's solution (FELTZ), 1873, 296.  
 action of normal malt-extract on (BROWN and HERON), 1879, T., 609.  
 action of lime and, on mercurous chloride (VULPIUS), 1879, A., 889.  
 action of silver nitrate on (BORODULIN), 1873, 46.  
 action of sulphuric acid on (v. GROTE and TOLLENS), 1874, 250, 566.  
 crystallisable, action of various substances on (PELLET), 1878, A., 719.  
 oxidation of (HEYER), 1882, A., 1041.  
 changes in, of beet (PASTEUR), 1873, 659.  
 action of yeast on solutions of (GUNNING), 1873, 46.  
 fermentation of (GAYON), 1879, A., 336.  
 cellulosic fermentation of (DURIN), 1876, ii., 540.  
 influence of invertin on the fermentation of (ANON.), 1882, A., 1277.  
 influence of succinic acid on the fermentation of (GAYON), 1881, A., 836.  
 butyric fermentation produced by aquatic plants in solutions of (SCHÜTZENBERGER), 1875, 910; 1876, i., 99.  
 inversion of (GAYON), 1879, A., 336.  
 thermic effects which accompany the inversion of (FLEURY), 1875, 1250; 1876, i., 183.  
 inversion of, at the ordinary temperature (URECH), 1881, A., 243; 1882, A., 30.  
 action of acids and salts on the inversion of (FLEURY), 1876, ii., 397.  
 inversion of, by acids and salts (FLEURY), 1877, i., 451.  
 inversion of, by carbonic anhydride (v. LIPPMANN), 1881, A., 148; (MAUMENE), 1882, A., 490.

## CARBOHYDRATES—

- Sucrose** (*saccharose*; *cane-sugar*),  
 inversion of, and consecutive alteration of the glucoses so formed (DURIN), 1879, A., 369; 1881, A., 127.  
 inversion of, for wine (EUGLING), 1880, A., 833.  
 spontaneous changes in raw (GAYON), 1881, A., 332.  
 transformations undergone by, in raw sugar and in the cane (MÜNTZ), 1876, i., 807.  
 conversion of, into glucose by the action of light (RAOULT), 1873, 490.  
 transformation of the crystallisable portion of brown, into inactive glucose (GAYON), 1877, ii., 303; 1879, A., 97.  
 transformation of, into glucose in the operations of sugar-refining (GIRARD), 1876, ii., 680.  
 adulteration of, with glucose (CASAMAJOR), 1881, A., 1089.  
 deterioration of, by keeping (PELLET and BULLIER), 1882, A., 122.  
 decomposition products of (REICHARDT), 1880, A., 864.  
 products of the distillation of, with lime (BENEDIKT), 1873, 490.  
 compound of potassium chloride with (VIOLETTE), 1873, 611.  
 combination of, with ferrous carbonate (TANRET), 1881, A., 157.  
 compound of, with lime, direct decomposition of (PAULY), 1880, A., 931.  
 compounds of, with carbonate of lime (HORSIN-DÉON), 1873, 612.  
 sodium-compound of (PFEIFFER and TOLLENS), 1882, A., 491.  
 inactive glucose in crude (GAYON), 1877, ii., 303; 1879, A., 97.  
 vanillin in raw (SCHEIBLER), 1880, A., 467; (v. LIPPMANN), 1880, A., 646; (ANON.), 1880, A., 864.  
 optical inactivity of the reducing sugar contained in (GIRARD and LABORDE), 1876, i., 806.  
 manufacture of (MIGNON and ROUART), 1876, ii., 680; (ANON.), 1881, A., 951; (MEHRLE), 1882, A., 122.  
 improvements in (DUNCAN, J. A. R. and B. E. R. NEWLANDS), 1879, A., 421, 496; (PRICE; WEINRICH), 1879, A., 423.  
 present state of the, in France (LAMY), 1877, i., 116.

## CARBOHYDRATES—

**Sucrose** (*saccharose*; *cane-sugar*), manufacture and purification of (TANNEVEAU), 1877, ii., 241.  
from sap of beetroot (LÖWIG), 1880, A., 931.

from glucose (COLLEY and VAKOVITCH), 1881, A., 402.

use of maize in the (ANON.), 1881, A., 330.

manufacture of, from molasses (JÜNEMANN), 1873, 99; 1881, A., 128; 1882, A., 784; (ANON.), 1873, 1276; 1880, A., 357; (SCHWARZ), 1878, A., 179; (DREVERMANN), 1879, A., 492, 844; (STEFFENS; MANOURY; MATECZEK), 1879, A., 844; (SCHEIBLER), 1881, A., 128; 1882, A., 673, 1015; (GAYON), 1881, A., 480; (DUBRUNFAUT), 1882, A., 122; (KROUPA), 1882, A., 784; (BODENBENDER), 1882, A., 1015; (V. WACHTEL), 1882, A., 1146.

from lime sludge (SCHILLER), 1882, A., 1015.

use of animal charcoal in (STAMMER), 1873, 1061; (PELLET), 1881, A., 127; 1882, A., 673; (MOTT), 1882, A., 122.

without animal charcoal and with sulphurousanhydride (MEYER), 1882, A., 905.

gypsum in the (V. WACHTEL), 1880, A., 834.

application of magnesia to the defecation of liquors in (BERNARD and EHLMANN), 1877, i., 343.

use of phosphoric acid in the (ANON.), 1876, ii., 341; (VIBRANS), 1877, i., 357.

use of phosphoric acid in, for freeing sugar from lim' (SCHEIBLER), 1874, 1189.

estimation of the rat' of the actual ash to t' sulphated ash (VIOLETTE), 1875, 384.

process for estimating the alkalinity of juice in the (VIVIEN), 1873, 1060.

action of barium hydroxide on certain mineral and organic compounds in (LAGRANGE), 1875, 675.

preservation of diffusion residues from (MÄRCKER), 1881, A., 932.

## CARBOHYDRATES—

**Sucrose** (*saccharose*; *cane-sugar*), manufacture of, analysis of tell-tale liquors from the safes of two vacuum sugar-pans in (STEWART), 1876, i., 763.

evolution of red-fumes during the evaporation of sugar in the vacuum-pans in (MAUMENÉ), 1875, 108.

examination of an acid liquid from the condenser of the vacuum apparatus (BIRNBAUM and KÖKEN), 1875, 674; (ANON.), 1876, i., 135.

occurrence of malonic acid in the (V. LIPPMANN), 1881, A., 800.

purification of (LAGRANGE), 1874, 299; (MISIAGIEWICZ), 1875, 490.

use of ammonium phosphate and barium hydroxide for the (LAGRANGE), 1875, 490.

by Marguerite's process (ANON.), 1874, 1026.

use of alumina for the (KÖHL-RAUSCH), 1878, A., 690.

use of lime for the (LAMY), 1877, i., 116.

use of hydrochloric acid in (ANON.), 1877, i., 118.

variation in the coefficient of purity of juices, a consequence of sp. gr. (PELLET and BRÜNINGS), 1882, A., 1146.

bleaching of, by ozone (LEEDS), 1880, A., 74.

transformation of saccharose into glucose in the operations of (GIRARD), 1876, ii., 680.

**Octacetyl sucrose** (HERZFELD), 1880, A., 620.

**Sucroses** (BERTHELOT), 1880, A., 233; 1881, A., 567.

**Sucrose, detection and estimation of:—**

detection of starch-sugar mechanically mixed with (CASAMAJOR), 1880, A., 758; 1881, A., 654; 1882, A., 429.

analysis of raw (MILNE), 1875, 104; (STEWART), 1875, 1056; (RICHE and BARDY), 1876, ii., 662; (LAUGIER), 1879, A., 404; (STAMMER), 1880, A., 144, 520; (V. MOSER), 1880, A., 519.

analysis of, by means of platinum (KOPFER), 1876, i., 661.

raw, of the third produce, and the commercial analysis of the same (VIOLETTE), 1873, 957.

## CARBOHYDRATES—

**Sucrose, detection and estimation of:—**

- raw, method of obtaining comparable results in the commercial valuation of (KOHLEAUSCH), 1873, 298.
- estimation of, by standard solutions (PERROT), 1877, i., 744.
- influence of the asparagine contained in the liquors from beets and canes, on the saccharimetric determination; destruction of the rotatory power of the asparagine; method of determination (CHAMPION and PELLET), 1876, ii., 215.
- estimation of, by Barreswil's method (FELTZ), 1873, 1060; (LOISEAU), 1873, 1164.
- estimation of, in beet (SCHEIBLER), 1873, 296; 1874, 1015; 1880, A., 587; (ANON.), 1873, 1060; (HEINTZ), 1875, 288, 667; (WICHELHAUS; EISSFELDT; STAMMER), 1880, A., 144; (TOLLENS), 1881, A., 851.
- estimation of, in beet, by means of polarisation (JICINSKY), 1873, 1262.
- estimation of, in beet juice (BITTMANN), 1880, A., 144.
- copper-solutions for the estimation of (POSSOZ), 1873, 410.
- estimation of, by means of iron (RIFFARD), 1874, 292, 714.
- estimation of, in commercial products (GIRARD), 1878, A., 166.
- estimation of, in raw and refined commercial sugars (CASAMAJOR), 1880, A., 64.
- estimation of, in "lime mud" (NORD), 1882, A., 782.
- estimation of, in wine (ULBRICHT), 1881, A., 1182; 1882, A., 1000.
- analysis of the ash of (MACDONALD), 1878, A., 624.
- Sugars (*in general*)** (BOUCHARDAT), 1873, 160; (ANON.), 1882, A., 782.
- chemistry of (ANON.), 1880, A., 863.
- influence of the leaves and flowering branches on the nature and quantity of the, contained in the flower stem of the agave (BALLAND), 1877, ii., 506.
- in the cells of plants (VINES), 1878, T., 383.
- amounts of, contained in the nectar of various flowers (WILSON), 1878, A., 997.
- in grapes (MACH), 1878, A., 130.

## CARBOHYDRATES—

- Sugars (*in general*)**, quantity of, in grapes cut at various stages of their growth (WAGNER and ROHN), 1880, A., 179.
- in raisins (HAAS), 1880, A., 932.
- action of potassium or ammonium dichromate on (EDER), 1879, A., 911.
- reducing power of various (SOXHLET), 1878, A., 686; 1880, A., 66, 759; 1881, A., 887.
- behaviour of various, with alkaline copper, and mercury solutions (SOXHLET), 1880, A., 758.
- reducing action of uric acid and (SEEGEN), 1876, ii., 292.
- alleged power of glycerol to replace (USTIMOWITSCH), 1877, i., 220.
- constant ratio between the ash and non-sugar ingredients of (STROHMER), 1878, A., 624.
- physiology of, in the animal system (PAVY), 1881, A., 1058; 1882, A., 322.
- critical experiments on the formation of, in the blood (BERNARD), 1877, i., 485.
- physiology of, in relation to the blood (PAVY), 1877, ii., 909; 1880, A., 486.
- oxidation of, in the arterial systems (ESTOR and SAINTPIERRE), 1873, 398.
- in the liver, nature of (SEEGEN and KRATSCHEMER), 1880, A., 866.
- formation of, in the liver (BERNARD), 1878, A., 82; (SEEGEN and KRATSCHEMER), 1880, A., 905; 1882, A., 540.
- post-mortem formation of, in the liver (BÖHM and HOFFMANN), 1882, A., 541.
- found in the liver after *rigor mortis*, nature of (KÜLZ), 1881, A., 628.
- Date-sugar** (HORSIN-DEON), 1880, A., 100.
- Carageen-sugar** (BENTE), 1877, i., 65.
- Potato-starch-sugar**, composition and unwholesome effects of (NESSLER), 1881, A., 332.
- hurtful action of (KEDZIE), 1881, A., 770.
- detection of, when mechanically mixed with cane-sugar (CASAMAJOR), 1880, A., 758; 1881, A., 654.
- syrup, detection of, when mixed with sugar-house molasses (CASAMAJOR), 1882, A., 429.



## CARBOHYDRATES—

**Sugars** (*indeterminate*) optically inactive (HALSE and STEINER), 1877, ii., 732.

in asparagus (VOGEL), 1874, 176.

from germinating cereals (KÜHNEMANN), 1875, 779.

in the petals of flowers (BOUSSINGAULT), 1877, i., 452.

formation of, in fruits (MERCADANTE), 1875, 904.

from rue (FÖRSTER), 1882, A., 976.

from quercitolsulphuric acid (SCHEIBLER), 1873, 166.

**Sugars, detection and estimation** :—weight of, to be taken in polarimetric analysis (DE LUYNES and GIRARD), 1875, 1293.

cupric test pellets for (PAVY), 1880, A., 761.

Fehling's solution as a qualitative reagent for (WORM-MÜLLER and HAGEN), 1881, A., 851.

Trommer's test, sensitiveness of, as a reagent for (WORM-MÜLLER and HAGEN), 1881, A., 851.

decompositions which occur in the use of (WORM-MÜLLER and HAGEN), 1881, A., 795.

estimation of (KRAUS), 1874, 714; (WEISS), 1874, 1182; (SACHSSE),

1877, ii., 226; (PAVY), 1879, A., 557; 1880, A., 512; (HEBNER),

1879, A., 834.

precautions required in using Knapp's solution for estimating (WORM-MÜLLER and HAGEN), 1882, A., 558.

estimation of, in malt liquors, by the ammoniacal copper test (STEINER), 1879, A., 1066.

estimation of, in blood (D'ARSONVAL), 1879, A., 674.

volumetric estimation of, in human urine and in animal liquids (WORM-MÜLLER and HAGEN), 1878, A., 531.

**Synanthrose.** See Levulin.

**Trehalose** from Fungi (MÜNTZ), 1873, 759; 1875, 380.

**Triticin** (MÜLLER), 1874, 39, 170.

**Tunicin** (FRANCHIMONT), 1880, A., 233.

**Vasculose** (FREMY), 1877, i., 229; (FREMY and URBAIN), 1882, A., 708.

certain properties of (FREMY and URBAIN), 1882, A., 420.

**Viscose.** See Dextran.

**Xylan** (*wood-gum*) (THOMSEN), 1879, A., 613.

**Carbohydrates.** See also Beet juice, Fehling's solution, and Molasses.

"**Carbohydroquinonic acid**," relation of, to protocatechuic acid (FITTIG and MACALPINE), 1873, 1145.

**Carbolic acid** as a disinfectant (ENDEMANN), 1876, i., 990.

difference in the action of solutions of, in oil and in water (WOLFFHÜGEL and v. KNORRE), 1882, A., 1143.

behaviour of different reagents on (ALMÉN), 1877, ii., 360; (GRÄTZEL), 1877, ii., 515.

paper, preparation of (HOMBURG), 1873, 424.

powders (ALLEN), 1878, A., 1012.

See also Phenol.

**$\alpha$ -Carbolutidinic acid.** See Pyridine-2:4:6-tricarboxylic acid.

**Carbometer**, analysis of carbonates by means of (PRUEN and JONES), 1877, ii., 38.

**Carbon**, existence of, in the coronal atmosphere of the sun (LOCKYER), 1880, A., 429.

native, new variety of, being the highest known member of the series of amorphous carbons (INOSTRANZEFF), 1881, A., 357.

the so-called chemical (KOPF), 1873, 1276.

of graphites and meteorites (BERTHELOT), 1874, 950.

and other bodies, deposition of, from the gases of blast furnaces (PATTINSON), 1877, ii., 375.

adamantine, or diamond, preparation of (MARSDEN), 1881, A., 682.

possibility of artificially preparing amorphous elementary, free from hydrogen, oxygen, and nitrogen (PORCHER), 1882, A., 26.

atomic weight of (ROSCOE), 1882, A., 794.

quantivalence of (CLAUS), 1881, A., 679.

quantivalence and combining capacity of (MEYER), 1876, i., 892.

the varying valency of, and the magnitude of the atomic volume of the elements contained in organic compounds (HERMANN), 1878, A., 638, 697.

spectrum of (WATTS), 1875, 327; (LOCKYER; LIVING and DEWAR), 1881, A., 957; 1882, A., 251.

refraction-equivalents of, in organic compounds (LANDOLT), 1873, 460; (GLADSTONE), 1881, A., 958; 1882, A., 133.

elasticity and electric conductivity of (v. BEETZ), 1881, A., 776.

**Carbon**, electric conductivity of, as affected by temperature (SIEMENS), 1880, A., 837.  
 experiment for showing the electric conductivity of various forms of (BAUERMANN), 1876, i., 332.  
 specific heat of (PUSCHL), 1874, 1046; (WEBER), 1876, i., 866.  
 specific heat of, at high temperatures (DEWAR), 1873, 239.  
 vapour, latent heat of, and Welter's law (BETRKE and LÜRMANN), 1876, ii., 267.  
 hardness and density of, from pure sugar (MONIER), 1874, 674.  
 diffusion of (VIOLE), 1882, A., 358.  
 negative or passive condition of, in graphite, diamond or charcoal (THOMSEN), 1873, 123.  
 magnitudes of affinity in (KLINGER), 1881, A., 679.  
 affinity of hydrogen for (THOMSEN), 1873, 127, 838.  
 action of, on carbonic anhydride at a red heat (DUMAS), 1873, 37.  
 hydrogenised, action of, on potassium chlorate and ferrieyanide (GLADSTONE and TRIEB), 1878, T., 310.  
 the part played by, in reducing the sulphates of the alkalis (MACTEAR), 1878, T., 475.  
 distribution of, in Bessemer steel (BELANI), 1873, 953.  
 of white pig-iron (SCHÜTZENBERGER and BOURGEOIS), 1875, 788.  
 in iron wire, effect of, on the use of the wire in standardising a solution of potassium permanganate (IRBY), 1874, 1179.  
 a third form of, in steel (DEBRUNNER), 1879, A., 842.  
 in steel, varying condition of, and its influence on Eggertz' colouration process (PARKER), 1881, A., 466.  
 in steel, condition of, and the effect of "hardening" upon it (HOGG), 1881, A., 478.  
 separation of, in open hearth, puddling-furnace and Bessemer-converters (BELL), 1879, A., 185.  
 use of Eggertz' method of estimating in the selection of steel (V. EHRENWERTH), 1875, 1291.  
 ash of hard, from coal-gas retorts (VAN SLOOTEN), 1877, i., 355.  
 combining of cobalt with (GARD), 1878, A., 376.  
 new compound of, with sulphur and bromine (HELL and URECH), 1882, A., 706.

**Carbon**, pure, for the electric light (JACQUELAIN), 1882, A., 1142.  
 points. See Electrochemistry.  
**Carbon tetrabromide**, formation of, in the manufacture of bromine (HAMILTON), 1881, T., 48.  
 formation of, from bromoform (HABERMANN), 1873, 865, 1013.  
 formation of, from bromine and methylic bromide (DAMOISEAU), 1881, A., 238.  
 chlorobromide from trichloroacetic acid (VAN'T HOFF), 1877, ii., 422.  
 chlorides (HOCU), 1873, 364.  
 transformation of, into bromides (GUSTAVSON), 1882, A., 375.  
 action of molecular silver on (GOLD-SCHMIDT), 1881, A., 707.  
*tetrachloride*, physical properties of (THORPE), 1880, T., 199.  
 distillation of, by steam (NAUMANN), 1878, A., 283.  
 distillation of mixtures of carbon disulphide, toluene and (BROWN), 1881, T., 304, 527.  
 volume of mixtures of benzene, carbon disulphide, toluene and (BROWN), 1881, T., 205.  
 action of, on phenol in alkaline solution (REIMER and TIEMANN), 1877, i., 77.  
 action of molecular silver on (GOLD-SCHMIDT), 1881, A., 707.  
 action of sodium on a mixture of bromobenzene and (GUARESCHI), 1878, A., 126.  
 action of, on sodium ethoxide (GEUTHER and BROCKHOFF), 1873, 868.  
 as an anæsthetic (MOREL), 1877, ii., 912.  
 conversion of, into bromide (GUSTAVSON), 1882, A., 375.  
 oxychloride. See Carbonyl chloride.  
*tetriodide* (GUSTAVSON), 1874, 881.  
 oxides, heats of combustion and formation of (THOMSEN), 1880, A., 785.  
*monoxide (carbonic oxide)*, sources of (LOMIN), 1876, ii., 58, 59.  
 in the air of rooms (ANON.), 1881, A., 318.  
 the chief product of combustion in the blast-furnace (SIEMENS), 1873, 667.  
 in foundry furnaces (WOLFFHÜGEL), 1879, A., 344.  
 evolution of, from red-hot iron stoves (FISCHER), 1880, A., 592.  
 reaction occurring in the preparation of, from potassium ferrocyanide (JEHN), 1873, 497.

**Carbon monoxide**, electric decomposition of (BRODIE), 1873, 744.  
 influence of electricity on mixtures of hydrogen and (P. and A. THENARD), 1873, 864.  
 heat of combination of, with chlorine, oxygen and sulphur (BERTHELOT), 1879, A., 591.  
 heat of combustion of (BERTHELOT), 1881, A., 8.  
 heat of combustion of oxygen and (BERTHELOT), 1878, A., 5; (MALLARD and LE CHATELIER), 1882, A., 453.  
 heat of formation of the compound of, with cuprous chloride (HAMMERL), 1879, A., 888.  
 absorption of, by cuprous chloride (THOMAS), 1878, T., 72.  
 relative affinity of oxygen for hydrogen and (v. MEYER), 1876, ii., 40; (HORSTMANN), 1878, A., 8; 1879, A., 436.  
 temperature of the flame of (FRANKLAND and THORNE), 1878, T., 94.  
 action of, on aniline, toluidine, acetylene, etc. (GARNITSCH-GARNITZKY), 1878, A., 217.  
 action of, on dry metallic alcoholates (GEUTHER, FRÖLICH and LOOSS), 1880, A., 622.  
 action of ozone on (REMSEN and SOUTHWORTH), 1876, i., 341.  
 action of aqueous vapour on (COQUILLION), 1879, A., 880.  
 behaviour of hydrogenised copper in (JOHNSON), 1879, T., 242.  
 oxidation of, by moist air in presence of phosphorus (LEEDS), 1880, A., 237.  
 an absorbent of (BÖTTINGER), 1877, ii., 725.  
 mixture, action of bacteria on (HATTON), 1881, T., 250.  
 poisoning by (GRUBER), 1881, A., 1086.  
 physiological action of (BERT), 1873, 1249; (POLECK and BIEFEL), 1878, A., 906; 1881, A., 853.  
 absorption of, by the blood (GRÉHANT), 1878, A., 994.  
 elimination of, from blood (PODOLINSKI), 1873, 397; (GRÉHANT), 1873, 646.  
 action of, on plants (STUTZER), 1877, i., 334.  
 detection of (VOGEL), 1877, ii., 640; 1878, A., 447.  
 limit of detection of (HEMPFEL), 1879, A., 1063.

**Carbon monoxide**, detection of, in blood (WEYL and v. ANREP), 1880, A., 817.  
 estimation of, combined with hæmoglobin (GRÉHANT), 1873, 646.  
*dioxide (carbonic anhydride)* in the atmosphere (HENNEBERG), 1873, 595; (TRUCHOT), 1874, 19; (TISANDIER), 1875, 1051; (MUIR), 1876, i., 679; (FITTOGEN and HÄSSELBARTH), 1876, ii., 58; 1880, A., 699; (FARSKÝ), 1878, A., 164; (HESSE), 1878, A., 605; 1879, A., 78; (REISET), 1879, A., 744; 1880, A., 605; 1881, A., 19; (MARIE-DAVY), 1880, A., 334, 788; (KAPUSTIN), 1880, A., 420; 1881, A., 204; (SCHLÆSSING), 1881, A., 19; (MEUNIER), 1881, A., 72; (MÜNTZ and AUBIN), 1881, A., 468, 875; 1882, A., 361; (ARMSTRONG), 1881, A., 974; (DUMAS), 1882, A., 692; (MASCART), 1882, A., 1137.  
 amount of, in the atmosphere at Calèves, near Nyon, Switzerland, altitude 420 m. (RISLER), 1882, A., 1026.  
 amount of, in the air of the Libyan desert (v. PETTENKOFER), 1876, i., 891.  
 in the air of the soils of Munich at different depths and at different times (v. PETTENKOFER), 1873, 361; 1874, 36.  
 amount of, in ground-air (SMOLENSKY), 1878, A., 555.  
 in the breath, demonstration of (CROSS), 1881, A., 1175.  
 distribution of, in close rooms (ERISMANN), 1877, ii., 810.  
 from muscle (STINTZING), 1880, A., 330; 1882, A., 539.  
 in sea-water (TORNÖRE), 1879, A., 1061.  
 of Vesuvius (FRANCO), 1874, 137.  
 formation of, by yeast alone, in presence and absence of oxygen (BÉCHAMP), 1879, A., 663.  
 preparation of, under any desired pressure (BEINS), 1879, A., 676.  
 physical properties of (RECKNAGEL), 1873, 589; 1874, 767; (ANDREWS), 1876, ii., 159.  
 spectrum of (WESSENDONCK), 1881, A., 861; 1882, A., 253.  
 influence of electricity on mixtures of marsh-gas and (P. and A. THENARD), 1873, 864.

**Carbon dioxide** (*carbonic anhydride*),  
 temperature-surface of (RITTER),  
 1879, A., 195.  
 heat of neutralisation of (THOMSEN), 1880, A., 362.  
 temperature of combustion and dissociation of (MALLARD and LE CHATELIER), 1882, A., 453.  
 behaviour of, in relation to pressure, volume and temperature (CLAUSIUS), 1880, A., 691.  
 compressibility of, under low pressures and at high temperatures (AMAGAT), 1881, A., 1094.  
 liquid (CAILLETET), 1873, 350.  
   presence of, in mineral cavities (HARTLEY), 1876, i., 137; 1877, i., 241.  
   in smoky quartz (HAWES), 1882, A., 474.  
 variations in the critical point of, in minerals, and deductions from these and other facts (HARTLEY), 1876, ii., 237.  
 density of, at a high temperature (CRAFTS), 1880, A., 434.  
 diffusion of, through water and alcohol (STEFAN), 1879, A., 347.  
 law of solubility of, in water at high pressures (v. WROBLEWSKI), 1882, A., 1021.  
 combination of, with water (v. WROBLEWSKI), 1882, A., 692.  
 hydrated, composition of (v. WROBLEWSKI), 1882, A., 692, 1026.  
 absorption of, by saline solutions (SETSCHENOFF), 1874, 334; 1875, 864, 1159.  
 apparently anomalous decompositions effected by (MONR), 1878, A., 111.  
 of the atmosphere, absorption of the sun's rays by (LECHER), 1881, A., 489.  
 barium hydroxide as an absorbent of (CLAËSSON), 1876, i., 959.  
 action of carbon and iron on, at a red heat (DRMAS), 1873, 37.  
 action of, on potassium iodide and on ozonoscopic papers (PAPA-SOGGI), 1881, A., 975.  
 action of, on sodium acetate (SETSCHENOFF), 1875, 879.  
 behaviour of calcium oxide with (BIRNBAUM and MAHN), 1880, A., 5; (RAOULT), 1881, A., 348.  
 behaviour of hydrogenised copper in (JOHNSON), 1879, T., 241.  
 action of bacteria on (HATTON), 1881, T., 254.

**Carbon dioxide** (*carbonic anhydride*),  
 influence of varying atmospheric pressure on the proportion of, to alcohol in alcoholic fermentation (BROWN), 1873, 978.  
 relation between the decomposition and formation of (LAWES), 1882, A., 548.  
 reduction of, to monoxide by means of ferrous phosphate (HORSFORD), 1874, 225, 654; 1875, 1159.  
 reduction of, by phosphorus at the ordinary temperature (LEEDS), 1880, A., 237, 298.  
 reduction of, to carbonic oxide by red-hot stannous oxide (WAGNER), 1880, A., 574.  
 compound of alumina with (URBAIN and RENOUL), 1879, A., 885.  
 combination of sodium oxide with (BEKETOFF), 1881, A., 348.  
 action of, on the animal organism (FRIEDLÄNDER and HERTER), 1879, A., 174.  
 distribution of, contained in the blood between the corpuscles and the serum (FREDERICQ), 1877, ii., 909.  
 absorption of, by blood (SETSCHENOFF), 1877, ii., 630.  
 application of absorptiometry to the condition of, in blood (SETSCHENOFF), 1874, 486.  
 influence of, on the respiration of animals (RAOULT), 1876, ii., 318.  
 comparative examination of the quantities of, excreted by respiration and perspiration in different species of animals in equal intervals of time (POTT), 1876, i., 721.  
 amount of, excreted by the human skin (AUBERT), 1873, 396.  
 influence of food upon the assimilation of oxygen and the excretion of (SPECK), 1876, i., 723.  
 influence of temperature on the excretion of (DUKE of BAVARIA), 1879, A., 74.  
 in plants. See Agricultural Chemistry.  
 test for, in coal-gas (SLOANE), 1882, A., 107.  
 use of Nessler's test for ammonia for the detection of, in water (SALZER), 1881, A., 940.  
 testing for free, in waters (v. PETTENKOFER), 1876, i., 435.



**Carbon dioxide** (*carbonic anhydride*), estimation of (HOUZEAU), 1873, 938; (NICHOLSON), 1874, 914; (WARINGTON), 1875, 1049; (VIBRANS), 1876, i., 434; (WIGNER), 1877, ii., 218; (GLADDING), 1881, A., 943.

use of a new derivative of gallic acid as an indicator for the estimation of (OSER and KALMANN), 1881, A., 815.

estimation of, in the atmosphere (HESSE), 1878, A., 605; 1879, A., 78; (KAPUSTIN), 1880, A., 420; 1881, A., 204; (MÜNTZ and AUBIN), 1881, A., 468.

estimation of, in air collected by the balloon "Le Zenith" (TIS-SANDIER), 1875, 1051.

estimation of, in air, at Tabor, Bohemia (FARSKÝ), 1878, A., 164.

and volatile and suspended organic matter in air, estimation of (DUPRÉ and HAKE), 1879, T., 168.

mode of application of Pettenkofer's process for the estimation of, in expired air (MARCET), 1880, T., 493.

estimation of, in carbonates (HESSEKT), 1875, 1050; (WIGNER), 1880, A., 346.

estimation of, in gases (WACKENRODER), 1873, 1053; (GAWALOWSKI), 1880, A., 573.

estimation of, in waters (HOUZEAU), 1876, ii., 426.

estimation of, in mineral waters (BORCHERS), 1878, A., 917.

estimation of, in sea-water (BUCHANAN), 1878, T., 460.

**Carbonic acid derivatives**, suggestions respecting the nomenclature of (BERNTSEN), 1882, A., 381.

**Carbonates**, heat of formation of (THOMSEN), 1880, A., 82, 361.

action of sulphur on, in presence of water (POLLACCI), 1875, 336.

action of solutions of the alkaline oxalates on earthy (SMITH), 1877, ii., 245.

decomposition of insoluble, by hydrogen sulphide (NAUDIN and DE MONTHOLON), 1876, ii., 479.

metallic, decomposition of, by heat (JOULIN), 1873, 844.

analysis of, by means of the carbometer (PRÜEN and JONES), 1877, ii., 38.

**Carbonates**, detection of, by the blow-pipe (CHAPMAN), 1877, i., 490.

estimation of, in presence of sulphites and hyposulphites (POLLACCI), 1878, A., 165.

thio-. See Thiocarbonates.

**Carbon monosulphide**  $\pm$  (SIDOT), 1875, 1236.

production of (KERN), 1876, ii., 477.

*disulphide* (FRIEDBURG), 1876, i., 679.

manufacture, present state of (BRAUN), 1876, i., 978.

in Swoszowice (MROWEC), 1879, A., 837.

solid, preparation of, for vines (LAFAURIE), 1881, A., 482.

solidification of (MERCIER), 1877, ii., 419.

purification of (KERN), 1876, i., 188; (ALLARY), 1881, A., 800.

physical properties of (THORPE), 1880, T., 363.

vapour of, appearance of the electric arc in (JAMIN and MANEUVRIER), 1882, A., 1157.

volume of mixtures of benzene and of carbon tetrachloride with (BROWN), 1881, T., 205.

effect of passing the mixed vapours of ethylic alcohol and, over red-hot copper (CARNELLEY), 1875, 523.

apparatus for studying the diffusion of, in the ground (KÖNIG), 1881, A., 650.

solubility of, in water (PAGE), 1881, A., 580.

frigorific effects produced by capillarity combined with evaporation of, on bibulous paper (DECHARME), 1874, 118, 219.

exsiccator for (ANON.), 1879, A., 875.

action of, on amides, aldehydes and alcohols (HLASWETZ and KACHLER), 1873, 497.

action of, on *o*-amidophenol (DÜXNER), 1876, ii., 204.

action of antimony pentachloride on (BERTRAND and FINOT), 1881, A., 239.

action of, on benzoin balsams and resins (GUICHARD), 1875, 762; 1876, i., 616.

action of bromine on (HELL and URECH), 1882, A., 706, 945.

catalytic action of, on mixtures of bromine with acetic or formic acid (HELL and MÜHLHÄUSER), 1878, A., 401.

**Carbon disulphide**, action of, on the hydroxides of calcium, barium, magnesium and zinc (WALKER), 1874, 1135.

action of iodine trichloride on (HANNAY), 1878, A., 833.

action of phosphonium iodide on (JAHN), 1880, A., 370.

action of, on silver-urea (PONOMAREFF), 1874, 1088.

action of trimethylamine on (BLEUNARD), 1879, A., 304.

explosive product of a solution of phosphorus in (PROCTER), 1879, A., 996.

removal of, from commercial benzene (NICKELS), 1881, A., 770, 950.

application of, to the freeing of wool from fats (ANON.), 1873, 658.

use of, for the extraction of sulphur (MROWEC), 1879, A., 837.

as an antiseptic (ZÖLLER), 1876, ii., 34, 679; (SCHIFF), 1877, i., 124.

test for, in coal-gas (SLOANE), 1882, A., 107.

detection of, in mustard-oil (LUCK), 1873, 1054.

estimation of small quantities of (V. HOFMANN), 1881, A., 308.

estimation of, by means of potassium xanthate (GRETE), 1876, ii., 551; 1877, ii., 929; 1878, A., 341.

estimation of, in thiocarbonates (DELACHANAL and MERMET), 1876, i., 108; (DAVID and ROMMIER), 1876, i., 109; (FINOT and BERTRAND), 1877, i., 744.

sulphochlorides. See Thiocarbonyl chlorides.

oxysulphide. See Carbonyl sulphide.

#### **Carbon, estimation of:—**

a new gravimetric method for the estimation of minute quantities of (DUPRÉ and HAKE), 1879, T., 159.

estimation, simultaneous, of hydrogen and nitrogen (HEMPERL), 1879, A., 278.

estimation of organic, in air (DUPRÉ and HAKE), 1881, T., 93.

estimation of, in iron and steel. See under Iron.

estimation of, in certain metals (DUPRÉ and HAKE), 1879, T., 168.

estimation of, in soils (WARRINGTON and PEAKE), 1880, T., 617.

estimation of organic, in potable waters (SMETHAM), 1881, A., 196.

#### **Carbon, estimation of:—**

estimation of organic, and nitrogen, in water analysis, simultaneously with the estimation of nitric acid (WILLIAMS), 1881, T., 144.

See also Animal Charcoal, Charcoal, Diamond, Graphite, and Lamp-black.

**Carbon compounds.** See Compounds, carbon.

**Carbon mercaptides** (CLAËSSON), 1877, ii., 296.

**Carbon-paper** rendered sensitive without a chrome-bath (VAN MONCKHOVEN), 1878, A., 919.

**Carbon pictures** on gypsum or earthenware plates (JACOBSEN), 1873, 424.

**Carbon-zinc couple** (GLADSTONE and TRIBE), 1879, T., 575.

electromotive force of, and reply to Berthelot's note on (TOMMASI), 1882, A., 1156.

**Carbonic acid.** See Carbon dioxide under Carbon.

**Carbonic ether**, chloro-. See Ethylie chloroformate.

**Carbonic ethers** (RÖSE), 1881, A., 251.

indices of refraction of the sulphuretted substitution-products of (WIEDEMANN), 1873, 620.

**Carbonic oxide.** See Carbon monoxide under Carbon.

**Carboniferous deposits** of the basin of the Donetz, and of Toula (Russia) (SCHEURER-KESTNER and MEUNIER-DOLLFUS), 1874, 238; 1875, 107; (KERN), 1875, 737, 1241.

**Carbo-m-nitrotetramidobenzene.** See Tetraphenyltetramidomethane, tetra-nitro-.

**Carbonyl bromide** (carbon oxybromide) (EMMERLING), 1880, A., 627.

chloride (carbon oxychloride; phosgene; chlorocarbonic acid), preparation of (PATERNO), 1878, A., 853.

production of, from chloroform (REGNAULD), 1882, A., 935.

action of, on ammonia (FENTON), 1879, T., 793.

synthesis of organic acids by means of (MICHLER), 1876, ii., 68.

synthesis of organic acids and ketones by means of (MICHLER and GRADMANN), 1877, ii., 334.

synthesis of aromatic ketones by means of (MICHLER), 1876, ii., 298.

conversion of, into formic acid (GEUTHER), 1881, A., 248.

- Carbonyl dichloride**, thio- (*carbon sulphochloride*), action of, on amides (RATHKE and SCHAFER), 1874, 163.  
 action of, on perchlorinated methyl mercaptan (RATHKE), 1873, 263.  
*tetrachloride*, thio- (*perchlorinated methyl mercaptan*) (RATHKE), 1873, 262.  
*sulphide* (*carbon oxysulphide*) (SALOMON), 1873, 350.  
 action of, on aqueous ammonia (SCHMIDT), 1877, ii., 307.  
 conversion of, into carbamide and thiocarbamide (BERTHELOT), 1882, A., 823.  
 thio-. See Thiocarbonyl-.
- Carbonylamidobenzoic acid**. See Diphenyluramidodi-*m*-carboxylic acid.
- Carbonyldiphenylene oxide**. See Diphenylene ketone oxide.
- Carbonyldiphenylene oxide**. See *iso*-Carbonyldiphenylene oxide. See Oxydiphenylene ketone.
- Carbonylditolylthiocarbamide** (*carbonylthiocarbotoxidide*) (WILL), 1881, A., 906.
- Carbonylhæmoglobin**. See under Hæmoglobin.
- Carbonyls**, the, a new class of organic compounds and the true function of ordinary camphor (BERTHELOT), 1875, 348.
- Carbonylthioisobutylamine**. See *iso*-Butylic thiocarbamate.
- Carbonylthiocarbamilide** (LA COSTE), 1881, A., 905.
- Carbonylthiocarbotoxidide**. See Carbonylditolylthiocarbamide.
- Carbonylthioethylamine**. See Ethylic thiocarbamate.
- Carbonylthiomethylamine**. See Methyllic thiocarbamate.
- Carbopetrocene** (PRUNIER), 1879, A., 1027.
- Carboxyridenic acid**. See Nicotinic acid.
- $\alpha$ -Carboxypyrrolic acid** (*pyrrolinocarboxylic acid*),  $\alpha$ -trichloro- and nitro-, and their salts (CIAMICIAN and DANESI), 1882, A., 875.
- $\beta$ -Carboxypyrrolic acid** (CIAMICIAN), 1882, A., 213.
- Carboxypyrottritic acid**, and its salts and reactions (HARROW), 1878, T., 425.
- Carbosilicon** (SCHÜTZENBERGER and COLSON), 1882, A., 571.  
 compounds, new (COLSON), 1882, A., 933.
- Carbostyryl** (2'-*hydroxyquinoline*; 2'-*oxyquinoline*) and its derivatives (TIEMANN and OFFERMANN), 1881, A., 169; (FRIEDLÄNDER and OSTERMAIER), 1882, A., 201, 732; (FRIEDLÄNDER and WEINBERG), 1882, A., 1209.
- Carbostyryl**, amido- (*hydrazidocinnamic anhydride*) (FISCHER), 1881, A., 598.
- 3'-chloro- (FRIEDLÄNDER and OSTERMAIER), 1882, A., 733.
- Carbostyryl-4'-carboxylic acid** (*carbo-styrylic acid*) (FRIEDLÄNDER and OSTERMAIER), 1882, A., 782.
- Carbothialdine**, formation of, by the action of ammonium thiocarbamate and aldehyde (MÜLDER), 1874, 47.  
 chemical reactions of (GUARESCHI), 1878, A., 857.
- Carbotriethiohexabromide** (HELL and URECH), 1882, A., 706.
- Carbotriphenyltriarnine**. See Diphenylamidobenzamidine.
- p*-Carboxybenzenearsonic acid**. See *p*-Benzarsinic acid.
- Carboxybenzeneazo-**. See under Azo-.
- Carboxybenzenephosphonic acid**, its salts and chloride (MICHAELIS and PANEK), 1881, A., 603.
- o*-Carboxycinnamic acid** (*o*-*cinnamocarboxylic acid*) (GABRIEL and MICHAEL), 1878, A., 230, 427.
- Carboxycornicularic acid**, its lactone and its constitution (SPIEGEL), 1882, A., 1076.
- Carboxyl**, direct introduction of, into phenols and aromatic acids (SENHOFER and BRUNNER), 1881, A., 265; (SENHOFER and SARLAY), 1881, A., 1140.  
 replacement of, by amidogen (LOSSEN), 1875, 769.
- Carboxymethoxybenzeneazo- $\beta$ -naphthol** (*azoxyanisyl- $\beta$ -naphthol*) (GRIESS), 1882, A., 49.
- Carboxymethoxybenzeneazo- $\beta$ -naphthol-mono- and -di-sulphonic acid** (GRIESS), 1882, A., 49.
- Carboxynaphthaleneazo- $\beta$ -naphthoic acid** (*azonaphthoic acid*) (v. RAKOWSKI), 1873, 392.
- p*-Carboxyphenylacetic acid** (*homoterephthalic acid*) (PATERNO and SPICA), 1878, A., 139, 296.
- Carboxyphenylmethyltrichlorethane**. See Tolyethylbenzoic acid, trichloro-.
- o*-Carboxyphenylsulphuric acid**. See Sulphosalicylic acid.
- Carboxyphenylsulphuric acids**, *m*- and *p*- (BAUMANN), 1879, A., 150.
- "Carboxypyruvic acid, thio-"** (DEWAR), 1873, 75.

- Carboxytartronic acid.** See Dihydroxytartaric acid.
- p*-Carboxytolueneazo-*p*-toluic acid (azotoluic acid)** (FITTICA), 1875, 265.
- Carbusnic acid.** See Usmic acid.
- "Carica fat acid"** (PECKOLT), 1880, A., 129.
- Carica Papaya*** (PECKOLT), 1880, A., 128; (WURTZ), 1881, A., 58, 750. digestive ferment of (WURTZ and BOUCHUT), 1879, A., 1048. action of the sap of (WITTMACK), 1879, A., 1048.
- Caricin** (PECKOLT), 1880, A., 129.
- Carminaphthe**, Laurent's (GUYARD), 1879, A., 466; (PLIMPTON), 1880, T., 641.
- Carminic acid**, action of iodine on (FRÉBAULT), 1877, i., 347.
- Carnallite**, occurrence of thallium in (HAMMERBACHER), 1875, 734. as a manure and fixer of ammonia (FITZBOGEN), 1882, A., 1130.
- Carnine** (SCHÜTZENBERGER), 1878, A., 235.
- Carob** (*St. John's bread*), *n*- and isobutyric acid from (GRÜNZWEIG), 1873, 374.
- Caroba balsam** (ANON.), 1882, A., 764.
- Caroba beans**, digestibility and nutrient power of (WEISKE), 1880, A., 563.
- Caroba leaves** (HESSE), 1880, A., 671.
- Carobic acid**, carobin and caroborin (ANON.), 1882, A., 764.
- Carpene** (OUDEMANS), 1874, 73.
- Carpets**, detection of arsenic in (HAGER), 1873, 943.
- Carpholite** (FISCHER), 1881, A., 990.
- Carrot seed**, analysis of (PETERMANN), 1879, A., 822.
- Cartilage**, development of (HEITZMANN), 1874, 596. of the shark (PETERSEN and SOXHLET), 1873, 1243.
- Carvacrol** (*cymenol*) (KEKULÉ), 1873, 1228; (KEKULÉ and FLEISCHER), 1874, 65; (JAHNS), 1880, A., 112; 1881, A., 95. occurrence of, in *Origanum hirtum* oil, in oil of *Thymus Serpyllum*, and in the ethereal oil of garden sage (*Salvia hortensis*) (JAHNS), 1882, A., 1065. from essence of savory (HALLER), 1882, A., 737. action of phosphorus sulphide on (RODERBURG), 1873, 1030. nitro-, action of nitric acid on the methyl ether of (PATERNO and CANZONERI), 1880, A., 884.
- Carvacrol** (*cymenol*), thio- (FLEISCH), 1873, 1029; (BECHLER), 1874, 471.
- Carvacrolsulphonic acid**, and its salts (JAHNS), 1880, A., 112.
- Carvacrotic acid** (KEKULÉ and FLEISCHER), 1874, 66.
- Carvacryl mercaptan** (RODERBURG), 1873, 1030.
- Carvacrylglycollic acid**, and its amide and salts (SPICA), 1880, A., 889.
- Carvol** (KEKULÉ and FLEISCHER), 1874, 65; (FLÜCKIGER), 1876, ii., 643.
- l*-Carvoxime** (*nitrosohesperidine*) (TILDEN and SHENSTONE), 1877, i., 558.
- Caryophyllaceæ**, colouring matter of the (HILGER and BISCHOFF), 1879, A., 730; 1880, A., 413.
- Caryophyllic acid** (MYLIUS), 1874, 80; (HJELT), 1880, A., 670.
- Caryophyllin**, and its *mono*- and *tri*-chlorides (HJELT), 1880, A., 670. oxidation products of (MYLIUS), 1874, 80.
- Cascarillin** (ALESSANDRI), 1882, A., 1004. composition of (C. and E. MYLIUS), 1874, 81.
- Casein** (BÉCHAMP), 1874, 993; (LJUBAVIN), 1878, A., 591; 1879, A., 735; (HAMMARSTEN), 1880, A., 171. identity of, with alkali-albuminate (SOXHLET), 1873, 188. formation of fat from, in the ripening of cheese (MUSSO and MENOZZI), 1879, A., 996. reaction of, with sodium tungstate (SONNENSCHNEIN), 1874, 296. action of rennet on (HAMMARSTEN), 1880, A., 172. coagulation of, by rennet, and on the so-called amphoteric reaction (HEINTZ), 1873, 514. mode of action of, in the coagulation of fibrin (HAMMARSTEN), 1877, i., 727. vegetable (BARBIERI), 1879, A., 273. estimation of, in milk (LEHMANN), 1878, A., 95; (BLYTH), 1879, T., 531. See also Proteids.
- metaCasein** (ROBERTS), 1881, A., 1053.
- Casks**, effect of adding soda or acid to the water used for seasoning (MORITZ), 1882, A., 1337. varnishing of (KANITZ), 1874, 1193.
- Cassava**, prussic acid from (FRANCIS), 1877, ii., 515.
- Cassia**, mineral constituents of (HEHNER), 1880, A., 360.



- Cassia occidentalis* from Martinique, seeds of (MOELLER), 1880, A., 936; 1881, A., 483.
- Cassiterite** (*tin stone*) (SHEPARD), 1881, A., 382; (VOM RATH), 1881, A., 549; (LIVERSIDGE), 1881, A., 995. occurrence of, at Truro (CROZET), 1878, A., 207. the crystal forms of (BECKE), 1878, A., 709. pseudomorphic crystals of, from Cornwall (PHILLIPS), 1875, 684. pseudomorph of, after orthoclase (GEINITZ), 1877, i., 698. See also Tin dioxide.
- Cast iron.** See under Iron.
- Cast nickel.** See under Nickel.
- Cast steel.** See Steel under Iron.
- Castor oil.** See under Oils, vegetable.
- Castor oil plant** (*Ricinus communis*), composition of the leaves of (WAYNE), 1874, 706. seeds, albuminoids from (RITTHAUSEN), 1879, A., 390; 1882, A., 876.
- Cat.** influence of temperature on the excretion of carbon dioxide and the absorption of oxygen by the (DUKE OF BAVARIA), 1879, A., 74; (V. VOIR), 1879, A., 75.
- Catalysis** (BAYLEY), 1879, A., 501. viscosity a cause of (GUYARD), 1879, A., 876. dissociation of hydrocarbons by means of palladium wire, and on the similarity of these phenomena to those of (COQUILLION), 1877, ii., 830.
- Catalytic reaction**, a new (WATSON), 1882, A., 1262. mechanics of (HÜFNER), 1875, 997.
- Catechin** from mahogany (LATOUR and CAZENEUVE), 1876, i., 86. action of diazobenzene chloride on (ETTI), 1882, A., 67. behaviour of, to potassium hydroxide (ETTI), 1877, ii., 490. acetyl derivatives of (LIEBERMANN and TAUCHERT), 1881, A., 52.
- Catechins** (ETTI), 1877, ii., 488; 1882, A., 67; (GAUTIER), 1877, ii., 892. from gambir (GAUTIER), 1878, A., 515. constitution of (GAUTIER), 1878, A., 64.
- Catechol.** See Pyrocatechol.
- Catechu** (*cutch*) from *Acacia Catechu*, action of sulphuric acid on (PAUL and KINGZETT), 1878, T., 219. artificial (ANON.), 1874, 400. glucose in (PAUL and KINGZETT), 1878, T., 219.
- Catechu** (*cutch*), occurrence of quercetin and quercitrin in (LOEWEN), 1874, 171. test for, in tea (EDER), 1879, A., 854.
- Catechuic and catechutannic acids** (LOEWE), 1875, 75.
- Catlinite** (KLIEN), 1879, A., 361.
- Cat's-eye**, so-called (FISCHER), 1874, 555. quartz (HORNSTEIN), 1877, ii., 411.
- Cattle.** See under Agricultural Chemistry.
- Caulosterin** (SCHULZE and BARBIERI), 1882, A., 1202.
- Caustic alkalis.** See Alkalis and Potassium and Sodium hydroxides.
- Cedrene**, from sage (MUIR), 1880, T., 679.
- Cedriret.** See Cœrulignone.
- Celandine** (*Chelidonium majus*), alkaloids of (MASING), 1877, i., 477. See also *Chelidonium majus*.
- "Celestialite"** in meteoric iron (SMITH), 1876, i., 537.
- Celestite** (*celestine*), occurrence of, in keuper-marls and its influence on the constituents of plants (STODART), 1877, ii., 281. from the Muschelkalk of Jühnde, near Göttingen (BABCOCK), 1881, A., 524. from Rudersdorf and Mokattam, crystalline form of (ARZRUNI), 1873, 1012. See also Strontium sulphate.
- Cells**, galvanic and voltaic. See Electrochemistry.
- plant-. See under Agricultural Chemistry.
- Cellulide** in bast fibre (BEVAN and CROSS), 1880, A., 668.
- Celluloid** (ANON.), 1880, A., 780; (BÖCKMANN), 1881, A., 481. action of strong alkalis on (GIRARD), 1882, A., 380.
- Celluloquinone** from bast fibre (BEVAN and CROSS), 1880, A., 668.
- Cellulose.** See under Carbohydrates.
- Cements** (ANON.), 1879, A., 407; 1880, A., 198; 1881, A., 1088, 1180; (DYCKERHOFF), 1880, A., 767. grinding apparatus for (ANON.), 1879, A., 408. influence of light on (ANON.), 1878, A., 759. action of, on lead pipes (BAMBERGER), 1882, A., 1335. influence of water on (ANON.), 1879, A., 408. for caustic lye tanks (ANON.), 1874, 500.

**Cements** for gas-retorts (CAPITAINE), 1875, 1301.  
 for glass and porcelain (LIESEGANG), 1873, 97; (ANON.), 1874, 1115.  
 glycerin (MORAWSKI), 1880, A., 428.  
 hydraulic, economical value of various (DYCKERHOFF), 1878, A., 813.  
 basic calcium carbonate in (SCHULATSCHENKO), 1873, 97.  
 Portland (LE CHATELIER), 1882, A., 1143.  
 from dolomitic limestone (ERDMENGER), 1874, 96; 1875, 672.  
 use of alkalis in the manufacture of, and its crumbling or disintegration (ERDMENGER), 1876, i., 967.  
 changes which take place in the setting of (ERDMENGER), 1876, i., 124.  
 hardening of, theory of (ANON.), 1879, A., 408.  
 testing of (ANON.), 1878, A., 176.  
 composition of (ANON.), 1881, A., 1181.  
 of plaster and lime, new (LANDRIN), 1875, 106.  
 testing of (HEINTZEL), 1878, A., 617.  
 valuation of (MICHAELIS), 1877, ii., 801.  
**Cementation-waters** (ANON.), 1881, A., 769.  
**Centrallassite** from Nova Scotia (HOW), 1876, ii., 55.  
**Cephalopods**, observations on some liquids of the organisms of (RABUTEAU and PAPILLON), 1873, 1150.  
**Cephalo-rachidian liquid**, composition of (YVON), 1878, A., 83.  
*Cerantonia Siliqua*, butyric acid from the fruit of (GRÜNZWEIG), 1873, 374.  
**Cereals**. See under Agricultural Chemistry.  
**Cerebrin** (*phrenosin*). See under Glucosides.  
**Cerebrose** (*brain-sugar*) and **cerebroscopic acid** (THUDICHUM), 1882, A., 537.  
**Ceresin** (GRABOWSKI), 1877, ii., 284.  
 specific gravity of (DIETERICH), 1882, A., 1139.  
**Cerite**, analyses of (BÜHRIG), 1879, A., 682.  
 crystalline form of (V. NORDENSKIÖLD), 1874, 778.  
**Cerium** (HILLEBRAND and NORTON), 1876, ii., 276.  
 atomic weight of (RAMMELSBERG), 1873, 601; 1877, i., 282; (MENDÉLÉEFF), 1873, 1004; (BÜHRIG), 1876, i., 682; (HILLEBRAND), 1877, i., 50.

**Cerium**, distribution of (COSSA), 1879, A., 695.  
 presence of, in the coal measures of St. Etienne (MAYENÇON), 1881, A., 21.  
 preparation of (FREY), 1877, i., 689.  
 specific heat of (HILLEBRAND), 1877, i., 50.  
**Cerium salts** (RAMMELSBERG), 1873, 601; (MARIGNAC), 1874, 24.  
 pure, preparation of (HARTLEY), 1882, T., 202.  
 behaviour of, to hydrofluosilicic acid (ŠTOLBA), 1874, 1008.  
**Cerium chlorostannate** (CLEVE), 1879, A., 601.  
*tetrafluoride* and its double salt (BRAUNER), 1882, T., 69.  
 oxide, heat produced by neutralisation of (THOMSEN), 1874, 430.  
 phosphate containing fluorine (RADOMINSKI), 1874, 663.  
 phosphates, preparation and analysis of (HARTLEY), 1882, T., 204.  
 hypophosphite (RAMMELSBERG), 1873, 9.  
 platinochloride and sulphates (MARIGNAC), 1874, 25.  
 tungstate (COSSA and ZECCHINI), 1880, A., 851.  
**Cerium, detection and estimation**:—  
 delicate test for (HARTLEY), 1882, T., 203.  
 estimation of (ŠTOLBA), 1880, A., 749; (HARTLEY), 1882, T., 206.  
 estimation of, free from didymium (BÜHRIG), 1876, i., 682.  
**Cerium aniline black** (BÜHRIG), 1879, A., 682.  
**Cerium-metals**, distribution of the (COSSA), 1881, A., 224.  
 absorption-spectra of the (SORET), 1881, A., 349.  
 chemical and crystallographic notes on the (MARIGNAC), 1874, 24.  
 atomic weights of the (RAMMELSBERG), 1873, 601; 1877, i., 282.  
 specific gravity and atomic volume of the (HERMANN), 1879, A., 579.  
 new earth of the (SMITH), 1879, A., 12.  
 estimation of the, in scheelite (COSSA), 1879, A., 696.  
 See also Earths, rare.  
**Cerolite** (*kerolite*) (FRENZEL), 1874, 446.  
**Cerotene** from vegetable fats (KÖNIG and KIESOW), 1873, 1215.  
**Cerotic acid** from bees'-wax (SCHALFÉEFF), 1877, i., 454.  
**Cerussite** (*white lead ore*) (SCHRAUF), 1874, 664; (ROSTER), 1878, A., 281.

**Cerussite** (*white lead ore*) from Rodna, in Transylvania (VRBA), 1878, A., 942.

crystallography of (V. ZEPHAROVICH), 1881, A., 232; (SELIGMANN), 1881, A., 397.

See also Lead carbonate.

**Cervantite** (*antimony-ochre*) (FRENZEL), 1878, A., 708.

native, from Arkansas (SANTOS), 1877, ii., 853.

See also Antimony oxide.

**Cetyl-**. See Hexadecyl-.

**Cetylacetic acid**. See Stearic acid.

**Cevadic acid**, and its reactions and derivatives (WRIGHT and LUFF), 1878, T., 339; (WRIGHT), 1879, T., 425.

**Cevadilline**, **cevalline** and **cevine** (WRIGHT and LUFF), 1878, T., 343.

**Ceylonite** (BAUER), 1881, A., 376.

**Chabazite** (STRENG), 1878, A., 478; (BRUSH and DANA), 1881, A., 531; (FRESSENIUS), 1881, A., 696.

twin-formation and optical properties of (BECKE), 1881, A., 398.

simultaneous formation of christianite and, under the influence of hot springs (DAUBRÉE), 1877, i., 444.

epidote, and specular iron from Mal Inverno (DOELTER), 1876, i., 887.

from Puy-de-Dôme (GONNARD), 1877, ii., 283.

**Chalcanthite** (ROSTER), 1878, A., 281.

**Chalcedony**, pseudomorphs of (GEINITZ), 1877, i., 692, 695, 696.

**Chalcedony-amygdaloid** filled with water (VOM RATH), 1877, ii., 860.

**Chalcomenite**, a new mineral (DES CLOIZEAUX and DAMOUR), 1881, A., 691.

**Chalcophanite** (MOORE), 1878, A., 115.

**Chalcosiderite** (MASKELYNE), 1875, 586.

**Chalk**, artificial (ANON.), 1874, 297; (NAKH), 1874, 609.

behaviour of, to tartaric and citric acid solutions containing iron, aluminium and phosphates (WARRINGTON), 1875, 990.

removal of, from animal charcoal by means of acetic (*pyroligneous*) acid (KNAPP), 1873, 99.

examination of English (VOGEL), 1874, 136.

black, preparation of (MIERZINSKI), 1882, A., 248.

red-, and red clay (CHURCH), 1875, 872.

See also Calcium carbonate.

**Chalk liniment**, preparation of, use of glycerol-sucrate of lime in the (LATOUR), 1874, 723.

**Chalybeate springs**. See under Water.

**Chalybite** (*spathic iron*), pseudomorphs of, after silicate of zinc (MÜLLER), 1876, i., 530.

**Chamomile oil**, Roman. See Oils, vegetable.

**Champagne**, clarification of must in the manufacture of (JEAN), 1882, A., 1145.

artificial, preparation of (HENNIG), 1878, A., 542.

**Changes**, chemical. See Affinity.

**Char**. See Animal charcoal.

**Characin** extracted from Algae by water (PHIPSON), 1880, A., 53, 325.

**Charcoal** from seaweed (STANFORD), 1878, A., 170.

spontaneous combustibility of (HARGREAVES), 1874, 420.

wood-, absorbing power of (JAILLARD), 1879, A., 761.

absorption of gases by; a new series of equivalents or molecular numbers (SMITH), 1879, A., 500.

condensation of gases by (MEISENS), 1874, 120; (JOULIN), 1880, A., 526.

oxidizing power of (V. HOFMANN), 1874, 764.

decolourising, and its production (MEISENS), 1874, 1189.

action of, on a solution of gold chloride (KÖNIG), 1882, A., 809.

action of, on organic nitrogen (STANFORD), 1873, 14.

action of steam on red-hot (LONG), 1878, A., 961.

effect produced by the admixture of foreign substances with, in the production of carbon points for the electric light (GAUDUIN), 1877, ii., 104.

acceleration of coagulation by (SCHMIDT), 1873, 185.

use of, as a depilatory agent (ANON.), 1874, 500.

animal- and bone-. See Animal charcoal.

See also Carbon.

**Charcoal-bricks**, preparation of (WEBER), 1874, 1022.

**Chassignite** (SHEPARD), 1881, A., 395.

**Chaulmoogra oil** (DYMCK), 1876, ii., 207.

"**Chavicine**" (BUCHHEIM), 1877, ii., 195.

**Cheese**. See under Agricultural Chemistry.

**Chelidonic acid** (*jervic acid*) from white hellebore root and its salts (WEPFEN), 1873, 905.

*Chelidonium majus*, presence of citric and malic acids in (HAITINGER), 1882, A., 82.

See also Celandine.

**Chemical action, affinity, attraction, changes, combination, decomposition, equilibrium, force, phenomena and repulsion.** See under Affinity.

**Chemical compounds.** See under Compounds.

constants, some (JANOVSKY), 1880, A., 365.

constitution of organic compounds. See under Compounds, carbon.

**Chemical manufactures of Germany at the Centennial Exhibition at Philadelphia (1876) (ANON.),** 1878, A., 456.

**Chemistry, inorganic, systematization of (MEYER),** 1873, 591.

**Chenopidine in coal (REINSCH),** 1881, A., 107.

*Chenopodium Quinoa*, colouring matter of (HILGER and BISCHOFF), 1879, A., 730.

**Cherry laurel, effect of cold on (FLÜCKIGER),** 1880, A., 733.

essential oil of (TILDEN), 1875, 1258.

**Cherry water, examination of (NESSLER),** 1882, A., 348.

**Chessylite, pseudomorph of, after cuprite (GEINITZ),** 1877, i., 697.

**Chestnut tree, influence of the chemical composition of the soil on the growth of (FLICHE and GRANDEAU),** 1875, 97.

disease of (ANON.), 1879, A., 821.

**Chica (MARCANO),** 1882, A., 1311.

**Chicken, does glycogen occur in the blastoderm of the? (KÜLZ),** 1881, A., 629.

See also Fowls.

**Chicken cholera (PASTEUR),** 1882, A., 324.

**Chicory, examination of (HUSON),** 1879, A., 558.

detection and estimation of, in coffee (LEEBOY), 1875, 288; (ALLEN), 1875, 785; (WITTSTEIN), 1875, 1295; (FRANZ), 1877, i., 752; (PRUNIER), 1880, A., 514.

**Children, urine of new-born (MARTIN, RUGE and BIEDERMANN),** 1876, i., 410.

**Childrenite (CHURCH),** 1873, 103.

chemical composition of (PENFIELD), 1881, A., 365.

and eosphorite, relation between (BRUSH and DANA; PENFIELD), 1881, A., 365.

**Chileite, Domeyko's (SILLIMAN),** 1881, A., 1108.

**Chili saltpetre.** See Sodium nitrate.

**Chin-.** See Quin-.

*Chinolinum tartaricum*, analysis of (FRIESE), 1882, A., 868.

**Chiolite, composition of (BRANDL),** 1882, A., 1176.

**Chitenidine (FORST and BÖHRINGER),** 1882, A., 1307.

**Chitenine (SKRAUP),** 1879, A., 809.

**Chitin (BÜTSCHLI),** 1876, ii., 104.

**Chloracetal.** See Acetal.

**Chloracetaldehyde.** See Acetaldehyde.

*tri*Chloracetaldehyde. See Chloral and Chloral hydrate.

**Chloracetamide.** See Acetamide.

**Chloracetanilide.** See Acetanilide.

**Chloracetethylamide, di- and tri-, and the action of phosphorus pentachloride on (WALLACH and KAMENSKI),** 1880, A., 547.

**Chloracetic acid.** See Acetic acid.

*tri*Chloracetic anhydride (CLERMONT), 1878, A., 401.

*tri*Chloracetic bromide (GAL), 1873, 745.

**Chloracetic chloride.** See Acetic chloride.

*tri*Chloracetic cyanide, and the action of hydrochloric acid on (HOFFER-RICHTER), 1880, A., 35.

some derivatives of (CLAISEN and ANTWEILER), 1881, A., 153.

*tri*Chloracetic iodide (GAL), 1873, 745.

**Chloracetocarbamide (TOMMASI),** 1873, 758, 880.

*tri*Chloracetochloramide (STEINER), 1882, A., 1281.

**Chlor- $\alpha$ -acetonaaphthalide (TOMMASI),** 1873, 1040; 1874, 629.

**Chloracetone.** See Acetone.

**Chloracetoneitrile, mono-, di-, and tri- (BISSCHOPINCK),** 1873, 1128.

action of alkalis on (BECKURTS and OTTO), 1877, i., 297.

**Chloracetophenone.** See Acetophenone.

$\omega$ -*tri*Chloracetophenone-*o*-carboxylic acid (GABRIEL and MICHAEL), 1878, A., 230.

**Chloracetotoluidide, action of ammonia on (TOMMASI),** 1874, 624.

**Chlor-*p*-acetotoluidide (MEYER),** 1876, i., 372.

**3-Chlor-*p*-acetotoluidide (WROBLEWSKI),** 1874, 54.

**Chloracetylbenzene.** See Acetophenone,  $\omega$ -chlor-.

*tri*Chloracetylcarbinol, preparation and properties of (PATERNO and PISATI), 1873, 158.

*tri*Chloracetylcarboxylic acid. See *tri*-Chloropyruvic acid.



**Chloracetylene** (WALLACH and BISCHOPF), 1878, A., 653; 1879, A., 453; (WALLACH), 1880, A., 800.

**Chloracetylenylic alcohol** (LADENBURG and DEMOLE), 1874, 37.

*di***Chloracetylhydrocærulignone** (HAYDUCK), 1876, ii., 516.

**Chloracrylic acid.** See Acrylic acid.

*di***Chloradipic acid** (BECKURTS and OTTO), 1878, A., 290.

**Chloral** (SQUIBB), 1873, 284; (PATERNO and OGLIALORO-TODARO), 1874, 459; (WALLACH), 1875, 349; (PINNER and FUCHS), 1877, ii., 584; (BYASSON), 1878, A., 967.

insoluble (GRABOWSKI), 1876, i., 551.

residue in the preparation of (FRIEDEL), 1876, ii., 66.

physical properties of (THORPE), 1880, T., 191.

thermochemistry of (BERTHELOT), 1877, ii., 827.

anhydrous, heat of combination of, with water vapour (BERTHELOT), 1877, ii., 825.

specific volume of (PASSAVANT), 1881, T., 53.

action of glacial acetic acid on (MEYER and DULK), 1873, 878.

action of, on acetonitrile (HÜBNER), 1873, 626.

action of, on albumin (BYASSON), 1874, 591.

action of, on allylic alcohol (OGLIALORO-TODARO), 1875, 878.

action of amines on (ČECH), 1877, ii., 586.

action of aniline on (WALLACH), 1875, 349; (AMATO), 1876, ii., 637.

action of the salts of aromatic bases on (WALLACH), 1875, 350.

action of, on benzene (GOLDSCHMIEDT), 1874, 150.

anhydrous, action of bromine on (OGLIALORO-TODARO), 1875, 877.

action of, on cyanamide (FILETI and SCHIFF), 1877, ii., 306.

action of hydrocyanic acid on (PINNER and BISCHOFF), 1876, i., 554.

action of iodic acid on (AMATO), 1876, ii., 505.

action of nitrous anhydride on (WALLACH), 1875, 350.

action of, on oxy-acids (WALLACH), 1877, i., 59.

action of potassium cyanide on (WALLACH), 1873, 627; 1878, A., 288.

action of sulphuric acid on (GRABOWSKI), 1873, 878; 1874, 46.

action of toluidine and xylydine on (WALLACH), 1875, 350.

**Chloral**, action of trimethylamine on (MEYER and DULK), 1873, 878.

action of zinc ethyl and zinc methyl on (V. GARZAROLLI-THURNLACKH), 1882, A., 295; (RIZZA), 1882, A., 491.

conversion of, into dichloroacetic acid (WALLACH), 1873, 627; (MEYER), 1878, A., 133.

transformation of, into *metachloral* (BYASSON), 1881, A., 248.

compounds of (MEYER and DULK), 1874, 460.

alcoholic derivatives of (HENRY), 1874, 979.

action of potassium cyanide on ammoniacal derivatives of (SCHIFF and SPECIALE), 1880, A., 102.

compound of, with acetic chloride (CURIE and MILLET), 1877, i., 188.

combination of, with albuminoid matters (PERSONNE), 1874, 355.

compound of, with benzene (V. BAEYER), 1873, 885.

compounds of, with bromo- and chloro-benzene (ZEIDLER), 1875, 148.

compound of, with hydrogen sulphide (PATERNO and OGLIALORO-TODARO), 1874, 459.

compounds of, with sulphuric acid (GRABOWSKI), 1873, 878; 1874, 46.

compound of, with thymol (JÄGER), 1875, 159.

physiological action of (TOMASZEWICZ), 1874, 814.

bromo- (JACOBSEN and NEUMEISTER), 1882, A., 938.

volumetric estimation of (MEYER and HAFETER), 1873, 1163.

**Metachloral**, transformation of chloral into (BYASSON), 1881, A., 248.

**Chloral alcoholate** (WURTZ), 1877, ii., 878.

and its heat of formation (BERTHELOT), 1881, A., 675.

bromo- (JACOBSEN and NEUMEISTER), 1882, A., 938.

amides of (ČECH), 1876, ii., 66.

cyanhydride (PINNER and BISCHOFF), 1876, i., 554.

cyanocyanate (ČECH), 1876, i., 376; ii., 66, 184; 1877, i., 67; 1878, A., 22.

**Chloral hydrate** (WURTZ), 1879, A., 914; (BERTHELOT), 1879, A., 1006.

manufacture of (DETSENYI), 1874, 572.

thermochemistry of (BERTHELOT), 1877, ii., 827; 1880, A., 293, 434; 1881, A., 676.

- Chloral hydrate**, heat of formation of (WURTZ), 1880, A., 293, 435, 604.  
dissociation of (BYASSON), 1873, 264; (TANRET), 1875, 56, 351; (NAUMANN), 1876, ii., 621; 1879, A., 690; (ENGELAND MOTTESSIER), 1878, A., 719; 1879, A., 500; (SAINTE-CLAIRE DEVILLE), 1880, A., 209; (WURTZ), 1880, A., 293.  
distillation of a mixture of chloroform and (TROOST), 1879, A., 876.  
vapour of (TROOST), 1877, ii., 829, 830; 1881, A., 573.  
constitution of the vapour of (WURTZ), 1877, ii., 404, 569; 1878, A., 702.  
action of ammonium sulphide on (DAVY), 1875, 142.  
action of aniline on (AMATO), 1876, ii., 637.  
action of hydrogen sulphide on (WYSS), 1874, 460.  
behaviour of, under the simultaneous action of cyanide and cyanate of potassium (CECH), 1876, i., 376.  
action of potassium cyanate on (WALLACH), 1876, i., 376.  
action of potassium sulphhydrate on (MICHAEL), 1877, i., 188.  
combination of, with camphor (BROWN), 1874, 723; (CAZENEUVE and IMBERT), 1881, A., 180.  
a new body occurring in urine after ingestion of (MUSCULUS and V. MERING), 1875, 657, 1040.  
bromo- (JACOBSEN and NEUMEISTER), 1882, A., 938.  
**Chloralacetamide**, constitution of (PINNER), 1878, A., 294.  
**Chloral-ammonia**, constitution of (SCHIFF), 1877, ii., 308.  
action of aldehydes on (SCHIFF and TASSINARI), 1878, A., 23; (SCHIFF), 1879, A., 452.  
action of acetic chloride or anhydride on (SCHIFF), 1877, ii., 308.  
derivatives of (SCHIFF and TASSINARI), 1878, A., 22.  
**Chloralbenzamide**, action of potassium cyanide on (SCHIFF and SPECIALE), 1880, A., 103.  
**Chloraldehydes**. See Aldehydes.  
**Chloralide** and its derivatives (GRABOWSKI), 1876, i., 551; (WALLACH), 1876, i., 551; 1879, A., 43.  
bromo- (JACOBSEN and NEUMEISTER), 1882, A., 938.  
**Chloralizarin**, *mono*-, *di*-, and *tetra*- (DIEHL), 1878, A., 428.  
*di***Chlorallylene**, action of fuming nitric acid on (PINNER), 1876, i., 57.  
*di***Chlorallylene**, conversion of, into acrylic acid (PINNER), 1874, 456.  
**Chlorallylic acetate** (MARTINOFF), 1876, i., 541.  
 $\beta$ -**Chlorallylic alcohol** and *tetrachloride* (V. ROMBURGH), 1882, A., 376.  
 $\alpha$ -**Chlorallylic chloride**. See Propylene, *ab-dichloro*-.  
**Chloralurethane** (BISCHOFF), 1874, 890.  
**Chloramidobenzene**. See Aniline, chloro-.  
5:3-**Chloramidobenzoic acid** (HÜBNER), 1878, A., 148.  
**Chloramidohydroeugenol**, and its hydrochloride (WESELSKY and BENEDIKT), 1882, A., 1201.  
*di***Chloramido-phenetol** and *-phenol*, 2:6:4- (JAEGER), 1875, 1260.  
**Chloramidodithiophenol** (*m-chloramidophenyl dimercaptan*) (ALLERT), 1881, A., 902.  
**Chloramidothymol hydrochloride** (ANDRESEN), 1881, A., 590.  
**Chloranethoil**, and the action of alcoholic potash on (LANDOLPH), 1876, i., 705; 1880, A., 385.  
**Chlorangelic acid**. See Chloro-hydroxyangelic acid.  
**Chlorangelic acid**, *mono*- and *di*- (PINNER and KLEIN), 1879, A., 43.  
**Chloranil**. See Quinone, *tetrachloro*-.  
**Chloranilic acid** (*dichloroquinonic acid*), formation of (ETARD), 1877, ii., 476.  
constitution of (HESSE), 1873, 388.  
**Chloraniline**. See Aniline, chloro-.  
**Chloranilinesulphonic acid** (PRATESI), 1873, 639.  
3-**Chloraniline-5-sulphonic acid** (POST and MEYER), 1881, A., 1037.  
2:6-(?)*di***Chlor-p-anisidine** (JAEGER), 1875, 1260.  
**Chloranthracene**. See Anthracene, chloro-.  
**Chloranthraquinone**, *tri*-, *tetra*- and *penta*- (DIEHL), 1878, A., 429.  
**Chlorastrolite** (HAWES), 1876, i., 193.  
**Chlorates**. See under Chlorine.  
**Chlorazo-compounds**. See under Azo-.  
**Chlorethane**. See Ethane.  
 $\beta$ -**Chlorethanesulphonic acid**, oxidation of chlorethylie thiocyanate into (JAMES), 1879, T., 806.  
**Chlorethanetricarboxylic acid** (BISCHOFF), 1881, A., 156.  
**Chlorethyl ether**. See Diethylie oxide, chloro-.  
**Chlorethylcresols**,  $\alpha$ - and  $\beta$ - (WROBLEWSKI), 1874, 55.  
**Chlorethylcrotonic acid** (DEMARÇAY), 1877, ii., 591.  
**Chlorethylenes**. See Ethylene.

*tri*Chlorethylglycollic acid, and its salts (V. GARZAROLLI-THURNLACKH), 1882, A., 295.

Chlorethylglyoxaline (WALLACH and SCHULZE), 1880, A., 547.

*tri*Chlorethylic acetate (KESSEL), 1878, A., 133; (V. GARZAROLLI-THURNLACKH), 1882, A., 295.

*tetra*Chlorethylic acetate, formation of, from chloral (MEYER and DULK), 1874, 460.

Chlorethylic alcohol. See Ethylic alcohol.

Chlorethylic thiocyanate, and its oxidation into  $\beta$ -chlorethanesulphonic acid (JAMES), 1879, T., 806.

"*tri*Chlorethylidenediacetamide" (HEPP), 1878, A., 66.

Trichlorethylidenedibenzamide (HEPP and SPIESS), 1877, i., 314.

*tri*Chlorethylidenediphenyldiacetamide (HEPP), 1878, A., 66.

Chlorethylidene-urethane (BISCHOFF), 1874, 890.

*tri*Chlor-3-ethylpyridine ( $\beta$ -lutiline), platinochloride of (WILLIAMS), 1882, A., 311.

2'-Chlor-3'-ethylquinoline (V. BAEYER and JACKSON), 1880, A., 407.

Chlorhydric acid. See Hydrochloric acid under Chlorine.

*as*-Chlorhydrin (*chloropropylene glycol*), action of ammonia, potassium cyanide, and of trimethylamine on (HARRIOT), 1877, ii., 301; 1879, A., 1031.

*s*-Chlorhydrin (*chlorotrimethylene glycol*) (HARRIOT), 1878, A., 657.

Chlorhydrins (HENRY), 1874, 457; (HARRIOT), 1879, A., 1029.

"Chlorhydrinimide," distillation products of (CLAUS), 1875, 633.

Chlorides. See under Chlorine.

*di*Chlorindole (*chloroxindole chloride*) (V. BAEYER), 1879, A., 535.

Chlorine, presence of, in scapolites (ADAMS), 1879, A., 697.

preparation of (TESSIE DU MOTAY), 1873, 96; (DE LALANDE and PRUD'HOMME), 1873, 1104; (BERTHELOT), 1881, A., 22.

new apparatus for the evolution of (ORLOWSKI), 1873, 96.

manufacture of (SOLVAY), 1879, A., 8; 1882, A., 278.

by Deacon's process (HASENCLEVER), 1876, ii., 669; (JURISCH), 1877, i., 350; (HENSEN), 1878, A., 551.

See also Weldon-mud, under Manganese dioxide.

Chlorine, mutual action of hydrochloric acid and oxygen on certain metallic compounds in producing a continuous stream of (Deacon's process) (LAMY), 1873, 1103.

purification of (ŠROUBA), 1874, 868.

suggestion as to the constitution of; offered by the dynamical theory of gases (RÜCKER), 1880, A., 692.

treatment of dilute (WELDON), 1873, 949.

specific heat of (STRECKER), 1881, A., 784.

behaviour of, at high temperatures (V. and C. MEYER), 1880, A., 214; (MEYER and ZÜBLIN), 1880, A., 432.

and its compounds, heat evolved in the reactions of (BERTHELOT), 1873, 1094.

heat of combination of, with carbon monoxide (BERTHELOT), 1879, A., 591.

specific volume of (THORPE), 1880, T., 383.

vapour-density of (MEYER), 1881, A., 219.

density of, at different temperatures (BRODIE), 1879, T., 676.

density of, at high temperatures (LIEBEN), 1879, A., 1011; (CRAFTS), 1880, A., 431; (MEYER and ZÜBLIN), 1880, A., 432.

dissociation of (BRODIE), 1879, T., 673; (SMITH and LOWE), 1882, A., 794.

anhydrous, melting-point of (BERTHELOT), 1878, A., 263.

solution of, in water (BERTHELOT), 1881, A., 784.

combination of hydrogen and, in the absence of light (MELSENS), 1873, 724.

affinity of hydrogen for (THOMSEN), 1873, 126, 838.

affinity of, for oxygen (THOMSEN), 1873, 1188.

displacement of, by bromine (POTILIZIN), 1874, 867; 1876, i., 677; 1877, ii., 109; 1879, A., 770; 1880, A., 365; 1881, A., 134, 342.

substitution of, in organic compounds (DAMOISEAU), 1876, ii., 617.

absorption of, by arsenious chloride, (SLOAN), 1882, A., 19.

bleaching, indelible ink for printing cotton and linen fabrics intended for (ANON.), 1876, ii., 236.

removal of, by sodium sulphite after bleaching (SCHUCHARDT), 1874, 95, 718.

action of, on acetone (BARBAGLIA), 1874, 789; (GRABOWSKI; BISCHOFF), 1876, i., 557.

**Chlorine**, action of, on acetonitrile (BECKURTS), 1877, i., 297.  
 action of, on fatty acids (KRAFFT), 1876, ii., 503; 1877, ii., 726.  
 action of, on aromatic substances (MERZ and RUOFF), 1876, ii., 511; 1877, i., 706; (RUOFF), 1877, i., 299.  
 action of, on amides (STEINER), 1882, A., 1281.  
 action of, on hot bismuthous oxide (MUIR), 1877, i., 26.  
 action of, on isodinaphthyl (SMITH and POYNTING), 1874, 855.  
 action of, on ethylenic oxychloride (ROTH), 1876, i., 364.  
 action of, on some hydrocarbons (KRAFFT and MERZ), 1876, i., 539.  
 action of, on hydrogen dioxide (FAIRLEY), 1877, i., 22.  
 influence of water on the action of, on iodine (SODINI), 1877, ii., 276.  
 influence of, on the properties of certain metals (KÜNZEL), 1875, 387.  
 action of, on mesaconic acid (MORAWSKI), 1875, 1254.  
 action of, on sodium citraconate and mesaconate (MORAWSKI), 1876, i., 562, 564.  
 action of, on isoamylic acetoacetate and acetoethylacetate (CONRAD), 1877, ii., 436.  
 action of, on protocatechuic acid (STENHOUSE), 1875, 10.  
 action of, on pyrogallol (STENHOUSE and GROVES), 1875, 704.  
 action of, on trimethylcarbinol (LOIDL), 1876, i., 365.  
**Chlorine hydrate** (GÖPNER), 1875, 732.  
 constitution of (SCHIFF), 1875, 733.  
 dissociation of (ISAMBERT), 1878, A., 370.  
*peroxide (dioxide or tetroxide)*, action of diffused daylight on a mixture of ethylene and (FÜRST), 1881, A., 399.  
 boiling point of (SCHACHERL), 1881, A., 345.  
 vapour-density of (v. PEBAL and SCHACHERL), 1882, A., 1161.  
 action of, on potassium permanganate (FÜRST), 1881, A., 353.  
*trioxide* (v. GARZAROLLI-THURNLACKH), 1881, A., 506; 1882, A., 460.  
*euchlorine* (v. PEBAL), 1875, 1157.  
**Hydrochloric acid** (*chlorhydric acid*, *hydrogen chloride*) (HAGER), 1873, 132; (SOLVAY), 1879, A., 8; 1882, A., 278; (LUNGE), 1882, A., 563.

**Hydrochloric acid** (*chlorhydric acid*, *hydrogen chloride*), preparation of (DE KONINCK), 1881, A., 138.  
 purification of (ENGEL), 1873, 840.  
 constitution of (THOMSEN), 1874, 952.  
 physical constants of (ANSDALL), 1880, A., 696; 1882, A., 266.  
 thermochemistry of (THOMSEN), 1873, 1096; 1874, 957.  
 heat of absorption of (CHRISTOMANOS), 1878, A., 7.  
 specific heat of concentrated solutions of (HAMMERL), 1880, A., 207.  
 vapour density of (CALM), 1879, A., 579.  
 density of, at a high temperature (CRAFTS), 1880, A., 434.  
 etherification of (VILLIERS), 1880, A., 711.  
 chemical equivalent of (MILLS and HOGARTH), 1880, A., 438.  
 aqueous, specific gravity of (THOMSEN), 1874, 955.  
 amount of ammonia absorbed by, from the air (HEINRICH), 1882, A., 798.  
 action of, on alcohol (GROVES), 1874, 639.  
 action of, on lead-antimony alloys (v. DER PLANTZ), 1875, 428; 1876, i., 45.  
 concentrated, action of, on citric acid, at a high temperature (HERGT), 1874, 457.  
 action of, on codeine (WRIGHT), 1873, 916.  
 action of, on ketones (HEYNE), 1875, 762.  
 mutual action of oxygen and, on certain metallic compounds in producing a continuous stream of chlorine (Deacon's process) (LAMY), 1873, 1103.  
 action of, on mercury (BERTHELOT), 1879, A., 298.  
 action of, on potassium chlorate (SCHACHERL), 1877, i., 47.  
 action of, on selenious anhydride (DITTE), 1876, ii., 476.  
 action of, on sulphates (HENSEN), 1877, i., 439; ii., 110; 1879, A., 105; (PRESCOTT), 1877, ii., 840.  
 compounds of, with ammonia (TROOST), 1879, A., 501.  
 combination of methylic oxide and (FRIEDEL), 1875, 1245.  
 compounds of the terpenes with (TILDEN), 1879, A., 943.



**Hydrochloric acid** (*chlorhydric acid*, *hydrogen chloride*), hydrocarbons produced by the action of, on cast-iron and steel (CLOËZ), 1874, 972.

arsenic in, from soda manufacture (HJELT), 1878, A., 175.

removal of arsenic from (HAGER), 1874, 868.

testing of, for arsenic (OSTER), 1873, 943.

sulphurous and arsenious acids in (HILGER), 1876, i., 443.

containing phosphoric acid (HOLDERMANN), 1879, A., 8.

use of, in the diffusion-process (ANON.), 1877, i., 118.

crystallised hydrate of (PIERRE and PUCHOT), 1876, i., 517.

**Chloride of lime.** See Bleaching powder and Calcium hypochlorite.

**Chlorides** contained in certain coals (GERLACH), 1873, 302.

in blast furnaces (MEINEKE), 1876, i., 452.

liquid, in blast furnaces (ANON.), 1879, A., 989.

Groves' method of preparing (SCHORLEMMER), 1875, 308.

constitution of (THOMSEN), 1874, 952.

heat of solution of (THOMSEN), 1877, ii., 693; 1879, A., 6.

isomorphism of (THOMSEN), 1874, 952.

action of, on sodium ethoxide (GEUTHER and BROCKHOFF), 1873, 866.

behaviour of, to the guaiacum-copper test for prussic acid (SCHÄR), 1874, 922.

formation of hypochlorites and chlorates from, by the action of

the electric current (LIDOFF and TICHOMIROFF), 1882, A., 925.

acid, preparation of (KANONNIKOFF), 1875, 879.

formation of, by the aid of chlorosulphonic acid (HEUMANN and KÖCHLIN), 1882, A., 1185.

heat of decomposition of (LUGININ), 1875, 631.

action of, on zinc-organic compounds (PAWLOFF), 1877, ii., 310, 732.

conversion of, into alcohols (DIAKONOFF), 1877, i., 58.

and aromatic hydrocarbons, ketones from (GRUCAREVIC and MERZ), 1873, 635, 1233; 1874, 263.

**Chlorides**, alcoholic, preparation of, and their application in the manufacture of colouring matters (MONNET and REVERDIN), 1878, A., 283.

alkaline, compound of, with lead tetrachloride (FISHER), 1879, T., 284.

metallic, volatile (MEYER and ZÜBLIN), 1880, A., 604.

preparation of (WATTS and BELL), 1878, T., 442.

anhydrous, new method of producing (CURIE), 1874, 336.

electrolysis of certain (GLADSTONE and TRIBE), 1876, i., 182.

electric conducting power of solutions of certain (KOHLEBAUSCH and GROTRIAN), 1875, 1149; 1876, i., 182.

vapour-densities of some (V. and C. MEYER), 1879, A., 1013.

action of, at a high temperature on certain hydrocarbons (SMITH), 1876, ii., 30; 1877, ii., 551.

action of hydrochloric acid on (DITTE), 1881, A., 223, 347, 785.

hydrochlorides of, and their reduction by hydrogen (BERTHELOT), 1881, A., 877.

anhydrous, compounds of ether with (BEDSON), 1876, i., 309.

organic, formation of (HOCH), 1873, 364.

action of, on amides (KRETZSCHMAR and SALOMON), 1874, 790; (KRETZSCHMAR), 1875, 563; 1877, i., 614; (HÜBNER), 1878, A., 407.

action of potassium cyanide on (CLAUS), 1875, 564.

**Hydrochloric acid**, test for free, in presence of, a metallic chloride (LÖWENTHAL), 1876, ii., 550.

**Hypochlorous acid**, formation and decomposition of (THOMSEN), 1875, 223.

heat of formation of (THOMSEN), 1873, 1190.

law of addition of (HENRY), 1876, ii., 620.

additive products of the allyl-compounds with (HENRY), 1874, 679; 1875, 345.

compound formed by the direct union of propylene with (HENRY), 1875, 443.

- Hypochlorous acid**, products obtained by the action of, on unsaturated compounds, particularly propylene (HENRY), 1875, 443, 1179; 1876, ii., 284.
- Hypochlorites**, preparation of pure (TESSIE DU MOTAY), 1873, 96.  
formation of, from chlorides by the action of the electric current (LIDOFF and TICHOMIROFF), 1882, A., 925.  
actions of, on some nitrogen-compounds (FENTON), 1879, T., 12.
- Hypochlorous acid**, detection and estimation of, in presence of chlorine, chlorous acid and chloric acid (WOLTERS), 1874, 386.
- Hypochloric acid** and euchlorine (V. PEBAL), 1875, 1157.
- Chlorites** (v. GARZAROLLI-THURNLACKH and v. HAYN), 1882, A., 460.
- Chloric acid**, heat of formation of (THOMSEN), 1873, 1188; 1877, ii., 696.
- Chlorates**, preparation of (ANON.), 1882, A., 431.  
preparation of, by means of aluminium chlorate (BRANDT), 1873, 950.  
formation of, from chlorides by the action of the electric current (LIDOFF and TICHOMIROFF), 1882, A., 925.  
and chloric acid, thermal conditions of the formation of (BERTHELOT), 1877, ii., 825.  
action of oxalic acid on (GUYARD), 1879, A., 593.  
behaviour of, in hot solutions (LUNGE), 1881, A., 322.  
pulverisation of, for pyrotechnical purposes (GAWALOWSKI), 1874, 1022.
- Chloric acid**, estimation of (THORPE), 1873, 547; (ANON.), 1882, A., 894.  
estimation of, in hypochlorites (DREYFUS), 1882, A., 94.
- Perchloric acid**, specific heat and heat of dilution of (BERTHELOT), 1881, A., 1092.  
as a test for alkaloids (FRANDE), 1880, A., 69.
- Chlorine**, detection, estimation and separation:—  
detection of, by sulphuric acid and potassium dichromate (WILEY), 1880, A., 744.  
volumetric estimation of (BOHLIG), 1874, 815.  
estimation of, by electrolysis (KINNICUTT), 1882, A., 772.
- Chlorine**, estimation and separation:—  
estimation of, by ammonium thiocyanate (HERTZ), 1879, A., 973.  
estimation of, by Carins's method (LINNEMANN), 1873, 527.  
estimation of, by the aid of Gooch's method of filtration (LINDO), 1882, A., 894.  
estimation of, potassio-calcic chromate as indicator in Mohr's method of (STOLBA), 1874, 1007.  
estimation of, by silver nitrate and potassium chromate (PELLET), 1877, i., 226; ii., 916.  
estimation of, in presence of iodine and bromine (VORTMANN), 1880, A., 509; 1882, A., 1230.  
estimation and separation of bromine, iodine and (GUYARD), 1879, A., 670.  
estimation of, in grain and forage (NOLTE), 1880, A., 285.  
estimation of, in commercial iron mordant (VOHL), 1874, 603.  
estimation of, in organic compounds (KOPP), 1876, i., 961; (SPICA), 1880, A., 348.  
estimation of, in organic substances and in vegetable and animal compounds (BRÜGELMANN), 1877, i., 739.  
estimation of, in vegetable and animal substances (v. ADLERSKRON), 1875, 186.  
estimation of, in presence of sulphurous acid (MESSEL), 1874, 287; (LUNGE), 1875, 185.  
estimation of, in urine (FALCK), 1875, 1058; (SALKOWSKI), 1879, A., 830; 1881, A., 643; (HABEL and FERNHOLZ), 1882, A., 551; (HABEL), 1882, A., 552.  
estimation of, in must and wine (ULBRICHT), 1880, A., 586.  
estimation of, in wines (NESSLER and BARTH), 1882, A., 999.  
See also Halogens.
- Chlorine acetate**, Schützenberger's (ARONHEIM), 1879, A., 452.
- Chloriodethane**. See Ethane.
- Chloriodethylene** (*acetylenic chloriodide*) (PLIMPTON), 1882, T., 392.
- Chloriodobenzene**, *o*- and *p*-, and isomeric chloriodonitrobenzenes, preparation of (KÖRNER), 1876, i., 215.
- Chloriodomethane**. See Methylenic chloriodide.
- Chloriodopropane**. See Propane.
- Chloridotoluene**,  $\alpha$ - and  $\beta$ - (WROBLEWSKI), 1874, 55.
- Chlorisatin** (v. BAEYER), 1879, A., 535.

- Chloritamalic acid.** See Chlorohydroxy-pyrotartaric acid.
- Chlorite** (PETERSEN), 1873, 735.  
conversion of garnet into (NIEDZ-WIEDZKI), 1873, 855.  
pseudomorphous, after garnet, from Lake Superior (PUMPELY), 1876, i., 194.  
See also Clinocllore and Penninite.
- Chlorites.** See under Chlorine.
- "Chloritic formation," rocks of the, on the western border of the New Haven region (HAWES), 1877, i., 286.
- Chloritoid** (*chlorite-spar*) (TSCHERMAK and ŠÍPČEZ), 1881, A., 234.
- Chlorobastins**, observations on (CROSS and BEVAN), 1882, T., 109.
- p*-Chlorobenzaldehyde** (JACKSON and WHITE), 1878, A., 728.
- o*-Chlorobenzamido-*p*-toluidide.** See *o*-Chlorobenzotolylenediamine.
- Chlorobenzene.** See Benzene.
- Chlorobenzenazo-.** See under Azo-.
- Chlorobenzenesulphonic acid.** See Benzenesulphonic acid.
- p*-Chlorobenzenesulphonic chloride** (NÖLTING), 1876, i., 928.
- di*Chlorobenzenyldiphenylamine.** See Diphenyldichlorobenzylamine.
- o*-Chlorobenzenylyltolylenediamine** (*anhydro-*o*-chlorobenz-*m*-amido-*p*-toluidide*) (SCHREIB), 1880, A., 557.
- Chlorobenzoic acid.** See Benzoic acid.
- o*-Chlorobenzo-*m*-nitro-*p*-toluidide** (SCHREIB), 1880, A., 557.
- p*-Chlorobenzophenone** (KOLLARITS and MERZ), 1873, 1036.
- o*-Chlorobenzo-*p*-toluidide**, and its derivatives (SCHREIB), 1880, A., 557.
- o*-Chlorobenzotolylene-3:4-diamine** (*o*-chlorobenzamido-*p*-toluidide), action of benzoic chloride on (SCHREIB), 1880, A., 557.
- p*-Chlorobenzyl ethyl oxide** (JACKSON and WHITE), 1881, A., 808.
- p*-Chlorobenzyl mercaptan**, mercury salt of (JACKSON and WHITE), 1881, A., 807.
- p*-Chlorobenzylamine** and its salts (JACKSON and FIELD), 1881, A., 804.
- p*-Chlorobenzyl-compounds** (JACKSON and WHITE), 1880, A., 878; 1881, A., 806; (JACKSON and FIELD), 1881, A., 803.
- p*-Chlorobenzyl alcohol** (JACKSON and FIELD), 1881, A., 803.
- p*-Chlorobenzyl chloride and bromide** (JACKSON and FIELD), 1879, A., 62; 1881, A., 803; (JACKSON and WHITE), 1880, A., 879.
- p*-Chlorobenzyl thiocyanate** (JACKSON and FIELD), 1881, A., 804.
- Chlorbutorcinol**, *di*- and *tetra*- (STENHOUSE and GROVES), 1880, T., 398.
- Chlorobrazilin** (LIEBERMANN and BURG), 1877, ii., 194.
- Chlorodibrom- and dichlorobrom-acetamide** (NEUMEISTER), 1882, A., 944.
- Chlorobromacetic acid** (ČECH and STEINER), 1876, i., 373.
- Chloro-*di*brom- and *dichlorobrom*-acetic acids and their salts** (NEUMEISTER), 1882, A., 943.
- Chlorobromacetone.** See Acetone.
- Chlorobromacrylic acid**, and its salts (HILL), 1879, A., 616; (HILL and MABERY), 1881, A., 1124; (MABERY and LLOYD), 1881, A., 1125.  
action of hydrogen bromide on (MABERY and WEBBER), 1882, A., 1047.
- Chlorobromal** and its alcoholate and hydrate (JACOBSEN and NEUMEISTER), 1882, A., 938.
- Chlorobromanilic acid** (KRAUSE), 1879, A., 462.
- 2:4-Chlorobromaniline** (FITTIG and BÜCHNER), 1878, A., 50.
- Chlorobromethane.** See Ethane.
- Chlorobromethylene.** See Ethylene.
- Chlorobromhydrin** oxidation of, by chromic acid (THEEGARTEN), 1874, 242.
- Chlorobromiodacrylic acid**, and its salts (MABERY and LLOYD), 1882, A., 1049.
- p*-Chlorobromobenzene**, preparation of (KÖRNER), 1876, i., 215.
- Chlorobromoform** (JACOBSEN and NEUMEISTER), 1882, A., 938.
- Chloro-*di*bromo- $\alpha$ -hydroxyvaleric acid** (PINNER and KLEIN), 1879, A., 42.
- Chloro-*di*bromomethane.** See Chlorobromoform.
- di*Chlorobromomethane.** See Bromochloroform.
- tri*Chlorobromomethane**, preparation and physical properties of (THORPE), 1880, T., 203.
- Chlorobromomethylethylglyoxaline** (WALLACH and OPPENHEIM), 1878, A., 55.
- Chlorobromonitrobenzene**, isomeric, preparation and properties of (KÖRNER), 1876, i., 220.
- Chlorobromopropanes.** See Propane.
- Chlorobromopropionic acid.** See Propionic acid.
- 2:5(?)Chlorobromoquinol** (LEVY and SCHULTZ), 1882, A., 509.

- 2:5-*di*Chloro-*di*bromoquinone (KRAUSE), 1879, A., 462.
- $\alpha$ -Chloro-*di*bromo- and *di*chlorobromoresorcinol (REINHARD), 1878, A., 726.
- Chlorobutaldehyde. See Butaldehyde.
- tri*Chlorobutaldehydeammonia, action of benzaldehyde on (SCHIFF), 1879, A., 452.
- tri*Chlorobutaldehydeurethane (BISCHOFF), 1874, 891.
- di*Chlorobutane (*isobutylidene chloride*) (PUCHOT), 1878, A., 20; (OECONOMIDES), 1881, A., 710.  
action of ammonia on (OECONOMIDES), 1881, A., 793.
- Chlorobutenyl acetate (*chlorocrotyl acetate*) and alcohol (V. GARZAROLLI-THURNLACKH), 1882, A., 1279.
- Chloro-*isobutylene* (OECONOMIDES), 1881, A., 709.  
action of hypochlorous acid on (OECONOMIDES), 1881, A., 793.
- Chlorobutylglyoxaline (*chlorovalumyl-ine*) (WALLACH and SCHULZE), 1880, A., 547.
- tri*Chlorobutyllic acetate (V. GARZAROLLI-THURNLACKH), 1882, A., 824, 1279.
- tri*Chlorobutyllic alcohol (V. GARZAROLLI-THURNLACKH), 1882, A., 824, 1279; (V. MERING), 1882, A., 952.
- $\alpha$ -Chloro-*isobutyllic* alcohol (*isobutene chlorhydrate*) (HENRY), 1876, ii., 397.
- tri*Chlorobutyllic chloride (V. GARZAROLLI-THURNLACKH), 1882, A., 1279.
- tri*Chlorobutylideneimide (PINNER and KLEIN), 1879, A., 42; (SCHIFF), 1879, A., 452.
- Chlorobutyric acid. See Butyric acid.
- Chlorocamphor. See Camphor.
- Chlorocarbazole. See Carbazole.
- Chlorocarbonic acid. See Carbonyl chloride.
- Chlorocarbonic ether. See Ethylic chloroformate.
- $\alpha$ -*tri*Chloro- $\alpha$ -carboxypyrrolic acid and its salts (CIAMICIAN and DANESI), 1882, A., 875.
- 3'-Chlorocarbostryl (FRIEDLÄNDER and OSTERMAIER), 1882, A., 733.
- Chlorochromic acid. See Chromyl dichloride.
- Chlorochromammonium salts (JÜRGENSEN), 1879, A., 124; 1880, A., 10.
- Chlorochrysene, *di*- and *tri*-(SCHMIDT), 1874, 987.
- di*Chlorochrysin (PICCARD), 1873, 1237.
- $\alpha$ -Chlorocinnamic acid (JUTZ), 1882, A., 1073.
- Chlorocitraconic acid (GOTTLIEB), 1874, 358.
- Chlorocitramalic acid, non-chlorinated derivatives of (MORAWSKI), 1875, 142.
- Chlorocobaltamine salts. See Cobalt-ammonium salts under Cobalt.
- Chlorocodeine, action of phosphorus pentachloride on (V. GERICHTEN), 1882, A., 313.
- Chlorocodide, base homologous with, formed by the action of hydrochloric acid on morphine (MAYER and WRIGHT), 1873, 215.
- Chlorocresol (BIEDERMANN), 1873, 898.
- $\alpha$ -Chlorocrotonamide (PINNER and KLEIN), 1879, A., 41.
- $\beta$ -Chlorocrotonic acid (*chlorotetracrylic acid*), behaviour of, on fusion (GEUTHER), 1880, A., 630.  
decomposition of, by alkalis (FRIEDRICH), 1882, A., 945.
- Chlorocrotonic chlorides, two isomeric (BURTON), 1882, A., 712.
- Chlorocrotonylcarbamide (PINNER and KLEIN), 1879, A., 41.
- Chlorocrotyl acetate. See Chlorobutenyl acetate.
- tetra*Chlorocryptidine, formed by the action of nascent hydrogen on cinchonine (ZORN), 1874, 484.
- di*Chlorocyanacetone (GRIMAUZ and ADAM), 1880, A., 801.
- "Chlorocyanic oil" (DAVY), 1878, A., 965.
- Chlorocymenes. See Cymene.
- Chlorodiacetylquinol, *mono*- and 2:5-*di*-(LEVY and SCHULTZ), 1882, A., 509.
- Chlorodiallyl. See Hexinyl chloride.
- Chlorodiao-compounds. See under Azo-.
- di*-*p*-Chlorodibenzylamine and its salts (JACKSON and FIELD), 1881, A., 804.
- di*-*p*-Chlorodibenzyllic disulphodioxide (JACKSON and WHITE), 1881, A., 808.
- di*-*p*-Chlorodibenzyllic sulphide, compound  $C_{14}H_{10}S_2$  produced by dry distillation of (LIMPRICHT), 1873, 1032.
- di*-*p*-Chlorodibenzyllic *mono*- and *di*-sulphide (JACKSON and WHITE), 1880, A., 879; 1881, A., 807.
- di*-*p*-Chlorodibenzylsulphone (JACKSON and WHITE), 1881, A., 807.
- Chlorodiethoxyethane. See Acetal, chlor-.
- Chlorodiethylic oxide. See Diethylic oxide.
- $\omega$ -*tri*Chlorodihydroxydicymylethane, and its derivatives (JÄGER), 1875, 159; 1877, i., 262.
- tetra*Chlorodihydroxydiphenylsulphone (ANNAHEIM), 1874, 796.



$\omega$ -*tri*Chlorodihydroxyphenylethane  
(TER MEER), 1875, 158.

*di*Chlorodihydroxytoluquinone and its  
potassium derivative (BRÄUNINGER),  
1878, A., 147.

Chloro-1:3-dimethoxybenzene, *mono*-  
and *di*- (HÖNIG), 1878, A., 727.

Chloro-1:4-dimethoxybenzene, 2:6-*di*-,  
and *tetra*- (HABERMANN), 1878, A.,  
728.

*tri*Chlorodimethylamidophenylamido-  
phenol (SCHMITT and ANDRESEN),  
1882, A., 401.

*tri*Chlorodimethylamidophenylamido-  
phenolsulphonic acid (SCHMITT and  
ANDRESEN), 1882, A., 401.

Chlorodimethylaniline. See Dimethyl-  
aniline.

Chlorodimethyllic oxide (FRIEDEL),  
1877, ii., 424.

$\omega$ -*tri*Chloro- $\alpha$ - and - $\beta$ -dinaphthylethane  
and  $\omega$ -*dichloro*- $\alpha$ - and - $\beta$ -dinaphthyl-  
ethylene (GRABOWSKI), 1873, 891;  
1878, A., 508.

*tetra*Chlorodiphenol and "*tetrachloro*-  
*diphenolquinone*." See *tetra*Chloro-  
diphenylenic dioxide.

*p*-Chlorodiphenyl (SCHULTZ), 1874, 468;  
1875, 149.

*per*Chlorodiphenyl (MERZ and WEITH),  
1878, A., 76.

*di*-*p*-Chlorodiphenylcarbamide, action  
of iodine on an alcoholic solution of  
(BEILSTEIN and KURBATOFF), 1874,  
1097.

*di*Chlorodiphenylcarbinolcarboxylic  
acid (v. BAeyer), 1880, A., 654.

*di*Chlorodiphenyl-*mono*- and -*tri*-chloro-  
ethane (ZEIDLER), 1875, 148.

*tetra*Chlorodiphenylenic dioxide ("*tetra*-  
*chlorodiphenolquinone*") (MAGATTI),  
1880, A., 644.

*di*-*p*-Chlorodiphenylethane (*dichlorodi*-  
*benzyl*) (KADE), 1880, A., 46.

$\omega$ -*di*Chloro- $\alpha$ -*diphenylethylene* (GOLD-  
SCHMIEDT), 1874, 151.

*di*Chloro-*s*-*diphenylhydrazine* (v. HOF-  
MANN and GEYGER), 1873, 169.

*di*-*p*-Chlorodiphenylic sulphide  
(KRAFFT), 1875, 153.

*di*Chlorodiphenylphthalide. See *di*-  
Chlorophenolphthalidein.

*di*-*p*-Chlorodiphenylsulphone (BECK-  
URTS and OTTO), 1879, A., 229.

*di*Chlorodiphtalyl (ADOR), 1873, 68.

*tetra*Chloro-1:3-dipropoxybenzene  
(*tetrachlorodipropylresorcinol*)  
(KARLOF), 1881, A., 269.

Chlorodiisopropyl ketone, *mono*-, *di*-  
and *tri*- (BARAGLIA and GUCCI),  
1881, A., 34.

$\omega$ -*tri*Chloroditolylethane. See *Di*-*p*-  
tolyltrichlorethane.

*di*Chloroditolylmethane (WEILER),  
1875, 152.

*tri*Chlorofluoranthene (GOLDSCHMIEDT),  
1881, A., 283.

Chloroform (*trichloromethane*) (RUMF),  
1875, 439; (VULPIUS), 1878, A.,  
844.

formation of, from alcohol and bleach-  
ing powder (BÉCHAMP), 1881, A.,  
566.

preparation of (DAMOISEAU), 1881,  
A., 238.

correction of some erroneous state-  
ments concerning the production of  
(BÉLOHOUBEK), 1873, 364.

physical properties of (THORPE), 1880,  
T., 196.

boiling-point and specific gravity of  
(REICHARDT), 1876, i., 363.

melting-point of (BERTHELOT), 1878,  
A., 263.

distillation of a mixture of chloral  
hydrate and (TROOST), 1879, A.,  
876.

exsiccator for (ANON.), 1879, A., 875.

action of the copper-zinc couple on  
(GLADSTONE and TRIBE), 1875,  
508.

action of, on ethylic sodacetate  
(OPPENHEIM and PFAFF), 1874,  
1161.

action of, on aromatic oxy-acids in  
alkaline solution (REIMER and TIE-  
MANN), 1877, i., 83.

action of, on alkaline salts of phenol  
(REIMER and TIEMANN), 1876, ii.,  
632.

action of, on potassium phenoxide  
(GUARESCHI), 1874, 259.

action of alcoholic potash on (BER-  
THELOT), 1878, A., 283.

action of potassium sulphide on  
(NICOL), 1882, A., 589.

actions of metallic sodium on (KERN),  
1875, 746.

action of sodium mercaptide on  
(CLAËSSON), 1877, ii., 293.

influence of, on decomposition (WAR-  
INGTON), 1878, T., 46; (SCHLESING  
and MÜNTZ), 1878, A., 163;

(IEHNER), 1879, A., 395.

as an anæsthetic (REGNAULD), 1879,  
A., 747.

tests for the purity of (DOTT), 1877,  
i., 346; (REGNAULD), 1879, A., 747.

containing amylie alcohol (WERNER),  
1878, A., 821.

bromo- (JACOBSEN and NEUMEISTER),  
1882, A., 938.

- Chloroform** (*trichloromethane*), detection of (REICHARDT), 1879, A., 280.  
 use of, in forensic chemistry (NOWAK), 1873, 412, 535.  
 new method of testing for, in cases of poisoning (VITALI), 1882, A., 777.  
 estimation of alcohol in (OUDEMANS), 1873, 533, 1059; (ALLEN), 1877, ii., 930.
- Chlorofulminoplatinums**, *di*-, *tri*-, and *tetra*- (V. MEYER), 1879, A., 374.
- Chlorogenine**. See Alstonine under Alkaloids.
- di***Chloroglycide**. See Propylene,  $\alpha\beta$ -dichloro-.
- tetra***Chloroguaiacone**. See *tetra*Chlorotoluquinone.
- di***Chlorohexamethoxydiphenyl** (EWALD), 1879, A., 253.
- Chlorohexane**. See Hexylic chloride.
- tri***Chlorohexoxo aldehyde** (*hexylchloral*) (PINNER), 1877, ii., 586.
- Chlorohexylic alcohol** (*hexylene chlorhydrin*) (DOMAC), 1881, A., 1114.
- Chlorohydroacrylic acid**. See Hydroacrylic acid.
- di***Chlorohydrocerulignone** (HAYDUCK), 1876, ii., 516.
- $\gamma$ -**Chloro- $\alpha$ -hydroxyangelic acid** (*chloroangelic acid*) and its amide (PINNER and KLEIN), 1879, A., 42.
- tri***Chloro- $\alpha$ -hydroxyangelic acid** (PINNER), 1874, 786; (PINNER and BISCHOFF), 1876, i., 556.
- Chloro-*p*-hydroxybenzaldehyde** (HERZFELD), 1878, A., 423.
- 3-Chloro-*p*-hydroxybenzoic acid** (HASSE), 1878, A., 416.
- Chlorohydroxyisobutyric acid**, preparation of (BISCHOFF), 1873, 159.
- s-di***Chlorohydroxyisobutyric acid** (GRIMAUZ and ADAM), 1880, A., 801.
- Chlorohydroxyisobutyric acid**,  $\alpha$ -*di*- and *tri*- (BISCHOFF), 1876, i., 557.
- Chlorohydroxybutyronitrile** (V. HOERMANN), 1879, A., 449.
- Chlorohydroxynaphthaquinonesulphonic acid**, potassium salt of (ARMSTRONG and GRAHAM), 1881, T., 138.
- Chlorohydroxypyrotartaric acid** (*chlorotartaric acid*) (MORAWSKI), 1873, 1221; 1875, 1254.
- Chlorohydroxythymoquinone** (LADENBURG and ENGELBRECHT), 1878, A., 60.
- tri***Chloro- $\alpha$ -hydroxyvaleric acid** (*trichlorovalerolactic acid*) (PINNER and KLEIN), 1879, A., 42.
- tri***Chlorohydroxyvaleronitrile** (*butylchloral hydrocyanide*) (PINNER and BISCHOFF), 1876, i., 554; (PINNER and KLEIN), 1879, A., 41.
- Chlorohyponitric anhydride**, Gay-Lussac's (GOLDSCHMIDT), 1881, A., 506.
- Chlorolactic acid**. See Lactic acid.
- Chloromalonaide** (CONRAD and BISCHOFF), 1882, A., 39.
- Chloromalonic acid**, and its derivatives (CONRAD and BISCHOFF), 1882, A., 39; (CONRAD and GUTHZEIT), 1882, A., 947.
- Chloromelanite** (FISCHER), 1881, A., 991.
- Chloromethane**. See Methyl chloride.
- di***Chloromethane**. See Methylene chloride.
- tri***Chloromethane**. See Chloroform.
- tetra***Chloromethane**. See Carbon tetrachloride.
- Chloromethyl isopropyl ketone** (ETARD), 1877, ii., 427.
- Chloromethylacrylic acid**, *mono*- and *di*-, and their salts (MORAWSKI), 1878, A., 213.
- Chloromethylethylglyoxaline**. See Methyleneethylglyoxaline.
- Chloromethylglyoxaline**, and its salts (WALLACH and SCHULZE), 1881, A., 572.
- Chloromethylic acetate and formate** (HENRY), 1873, 1117.
- tri***Chloromethylic carbonate** (COUNCLER), 1881, A., 251.
- Chloromucic acid**. See Mucochloric acid.
- di***Chloromuconic acid** (LIMPRICHT), 1873, 622; (BELL), 1879, A., 917.
- Chloronaphthalene**. See Naphthalene
- 1:4-diChloronaphthalene-3'-sulphonic acid** and chloride, and its salts (WIDMAN), 1879, A., 722.
- 1:3-diChloronaphthalene-4'-sulphonic acid** and chloride, and its salts (WIDMAN), 1880, A., 168.
- $\beta$ -*di***Chloro- $\alpha$ -naphthaquinone**, action of amines on (PLAGEMANN), 1882, A., 973.  
 action of ammonia and amines on (V. KNAPP and SCHULTZ), 1882, A., 510.
- 2:3:1'-triChloro- $\alpha$ -naphthaquinone** (CLAUS and SPRUCK), 1882, A., 1211.
- Chloro- $\alpha$ -naphthaquinone-anilide**, *p*-bromanilide and -nitranilides (PLAGEMANN), 1882, A., 973.
- 4-Chloro- $\alpha$ -naphthol** (CLAUS and OEHLEK), 1882, A., 736.
- 3'-Chloro- $\beta$ -naphthol** (CLAUS and ZIMMERMANN), 1881, A., 915.  
 from  $\beta$ -naphtholsulphonic acid (CLAUS and DEHNE), 1882, A., 734.
- di***Chloronaphthyrene glycol**. See *di*-Chlorotetrahydronaphthaquinol.
- Chlor- $\alpha$ -naphthylamine** (SEIDLER), 1878, A., 983.

- 4:2'-*di*Chloro- $\alpha$ -naphthylamine (CLEVE), 1878, A., 736.
- Chloro- $\beta$ -naphthyl *orthophosphate* (CLAUS and ZIMMERMANN), 1881, A., 915.
- Chloronitracetanilide, isomeric (BEILSTEIN and KURBATOFF), 1875, 1037; 1876, ii., 308; 1878, A., 974.
- tri*Chloro-3-nitr-*p*-acetotoluidide (FRIEDERICI), 1879, A., 311.
- Chloronitr- $\omega$ -amidophenylethane (LAUBENHEIMER), 1878, A., 976.
- Chloronitr-aniline. See Aniline.
- 2:4-Chloronitr-anisole (FISCHLI), 1878, A., 866.
- 5:2-Chloronitr-anisole (UHLEMANN), 1878, A., 978.
- 4:2:6-Chloro-*dinitranisole*, preparation of (KÖRNER), 1876, i., 230.
- di*Chloronitrazobenzene (CALM and HEUMANN), 1880, A., 880.
- p-di*Chloronitrazoxybenzene (HEUMANN), 1873, 168; (CALM and HEUMANN), 1880, A., 880.
- Chloro-*dinitrethane* (LAUTERBACH), 1879, A., 700.
- 5:2-Chloronitretoluidine (LAUBENHEIMER), 1878, A., 976.
- di*Chloro-*p*-nitroethylbenzene (DREWSSEN), 1882, A., 847.
- Chloronitrobenzene. See Benzene.
- m*-Chloronitrobenzenedisulphonic chloride (ALLERT), 1881, A., 902.
- 5:1-Chloronitrobenzene-2-sulphonamide (LAUBENHEIMER), 1882, A., 954.
- Chloronitrobenzenesulphonic acid. See Benzenesulphonic acid.
- 3:5-Chloronitrobenzoic acid (HÜBNER), 1878, A., 148.
- o*-Chloro-*di*- and -*tri*-nitrobenzo-*p*-toluidide (SCHREIB), 1880, A., 557.
- Chloronitro-compounds, action of sodium on (V. HOFMANN and GEYGER), 1873, 168.
- Chloronitrocymenes. See Cymene.
- $\omega$ -*tri*Chlorotetranitro- $\beta$ -dinaphthylethane and  $\omega$ -*dichlorotetranitro*-dinaphthylethane (GRABOWSKI), 1878, A., 509.
- di*Chloro-*dinitrodiphenyltrichlorethane* (ZEIDLER), 1875, 148.
- 4-*di*Chloro-2-*dinitrodiphenyl sulphide* (BEILSTEIN and KURBATOFF), 1878, A., 139; 1879, A., 231.
- tri*Chloronitromethane. See Chloropierin.
- Chloronitronaphthalene. See Naphthalene.
- Chloronitrophenetols, 4:2- and 2:4- (HALLOCK), 1881, A., 595.
- 4:2:6-Chloro-*dinitrophenolaniline* (SMITH and PEIRCE), 1880, A., 392.
- 2:6-Chloronitrophenol-4-sulphonic acid (ARMSTRONG and PREVOST), 1874, 804.
- 3:6-Chloronitrophenyl mercaptan (BEILSTEIN and KURBATOFF), 1879, A., 231.
- 4:2-Chloronitrophenyl mercaptan (BEILSTEIN and KURBATOFF), 1878, A., 139.
- 5:2-Chloronitro-*m*-phenylenediamine (BEILSTEIN and KURBATOFF), 1879, A., 310.
- $\alpha$ -Chloro-*o*-nitrophenyl- $\beta$ -lactic acid (V. BAeyer), 1881, A., 275.
- Chloronitrophenyl-*m*-phenylenediamine, and -*p*-toluidine (LAUBENHEIMER), 1878, A., 976.
- Chloronitrophenylthiocarbimide (V. HOFMANN), 1880, A., 387.
- 5-Chloronitrosalicylic acid, and its salts (SMITH and PEIRCE), 1880, A., 392.
- Chloro-*dinitrosalicylic acid* (HASSE), 1878, A., 416.
- $\omega$ -Chloro-*p*-nitrostyrene (DREWSSEN), 1882, A., 847.
- Chloronitrotoluene. See Tolnene.
- Chloronormethylopianic acid (PRINZ), 1882, A., 403.
- Chloropal (*unghevarite*) (KENNGOTT), 1879, A., 31; (LIVERSIDGE), 1881, A., 992.
- from Mugrau (SCHRAUF), 1877, ii., 859.
- di*Chloropentane, action of ammonia on (MICHAEL), 1882, A., 216.
- Chlorophenanethene. See Phenanthrene.
- Chlorophenol. See Phenol.
- di*Chlorophenol-hydrophthalidin and -phthalidein (V. BAeyer), 1880, A., 654.
- o*-Chlorophenolsulphonic acids,  $\gamma$ - and  $\delta$ -, and their salts (KRAMERS), 1875, 157.
- p*-Chlorophenylacetic acid and its nitrile (JACKSON and FIELD), 1881, A., 803.
- $\alpha$ -*di*Chlorophenylanthranol (V. BAeyer), 1880, A., 656.
- 4-Chloro-*o*-phenylenediamine (BEILSTEIN and KURBATOFF), 1875, 1037.
- 4-Chloro-*m*-phenylenediamine, formation of (BEILSTEIN and KURBATOFF), 1879, A., 144.
- di*Chlorophenylene- $\alpha$ -naphthyleneoxide (V. ARX), 1881, A., 282.
- p*-Chlorophenylphosphoric chloride (KEKULÉ), 1873, 1239.
- p*-Chlorophenylphthalimide (GABRIEL), 1879, A., 323.
- Chloro- $\alpha$ -phenylpropionic acid. See  $\alpha$ -Phenylpropionic acid.

- Chloro- $\beta$ -phenylpropionic acid**,  *$\beta$ -mono-* and  *$\alpha\beta$ -di-* (ERLENMEYER), 1882, A., 191.
- $\alpha\beta$ -diChloro- $\beta$ -phenylpropionic acid*, action of alcoholic potash on (JUTZ), 1882, A., 1073.
- Chlorophenylthiocarbimide**. See Phenylthiocarbimide.
- Chlorophthalic acid**. See Phthalic acid.
- 4-Chlorophthalic anhydride** (CLEVE), 1878, A., 736.
- triChlorophthalic anhydride* (ATTERBERG and WIDMAN), 1878, A., 322.
- Chlorophyll and chlorophyllan**. See under Agricultural Chemistry.
- Chlorophyllanic acid** (HOPPE-SEYLER), 1882, A., 412.
- Chlorophyllite**, gold and silver in (CUMENGE and FUCHS), 1879, A., 511.
- Chloropianic acid**, and its salts (PRINZ), 1882, A., 403.
- Chloropierin** (*trichloronitromethane; nitrochloroform*), physical properties of (THORPE), 1880, T., 198.
- Chloroplatinates**. See Platinochlorides under Platinum.
- Chloroplatinites**. See Platinosochlorides under Platinum.
- tetraChloropolypropionic acid* (STAHL-SCHMIDT), 1879, A., 383.
- $\beta$ -Chloropropaldehyde** (*acrolein hydrochloride*) (KRESTOWNIKOFF), 1878, A., 23; 1880, A., 234.
- $\beta$ -Chloropropaldehyde**, reactions of (TAUBERT), 1877, i., 295.
- $\beta$ -Chloroparapropaldehyde** (GRIMAU and ADAM), 1881, A., 406, 888.
- Chloropropane**. See *isopropyl* chloride.
- diChloropropanes***. See Propane.
- $\alpha\alpha$ -triChloropropane* (KRESTOWNIKOFF), 1880, A., 234; (VAN ROMBURGH), 1882, A., 589.
- tetraChloropropane* (*allene tetrachloride*) (HENRY), 1882, A., 1039.
- (*allylidene tetrachloride*) (HARSTENSTEIN), 1873, 1218; (VAN ROMBURGH), 1882, A., 376.
- $\alpha\alpha$ -diChloropropionamide* (BECKURTS and OTTO), 1878, A., 292.
- Chloropropionic acid**. See Propionic acid.
- $\alpha\alpha$ -diChloropropionic chloride* (BECKURTS and OTTO), 1878, A., 488.
- Chloropropionitrile**. See Propionitrile.
- Chloro-*n*- and -*iso*-propylcrotonic acids** (DEMARÇAY), 1877, ii., 591.
- Chloropropylenes**. See Propylene.
- s-diChloroisopropyl alcohol*. See Glyceryl dichlorhydrin.
- triChloroisopropyl alcohol* (V. GARZAROLLI-THURNLACKH), 1882, A., 295.
- $\beta$ -Chloropropylidene chloride** ( *$\alpha\alpha$ -trichloropropene*) (KRESTOWNIKOFF), 1880, A., 234; (VAN ROMBURGH), 1882, A., 589.
- diChloroisopropylphosphine* (MICHAELIS), 1881, A., 159.
- 2-Chloropyridine**, and its salts (CIAMICIAN and DENNSTEDT), 1881, A., 826.
- triChloropyruvic acid*** (*trichloroacetylcarboxylic acid*) (HOFFERICHTER), 1880, A., 35.
- synthesis of, and its amide (CLAISEN and ANTWEILER), 1881, A., 153.
- Chloroquinol**, *mono-*, *2:5-di-*, *2:3:5-tri-*, and *tetra-* (LEVY and SCHULTZ), 1880, A., 888; 1882, A., 509.
- 6-Chloroquinoldiacetate** (SCHULZ), 1882, A., 838.
- Chloroquinoline**. See Quinoline.
- Chloroquinone**. See Quinone.
- triChloroquinonechlorimide*, conversion of *p*-amidophenol into (SCHMITT and ANDRESEN), 1882, A., 611.
- 3:6-diChloroquinone-dianilide** and *-di-o-ethoxyanilide* (SCHMITT and ANDRESEN), 1882, A., 400.
- triChloroquinonedimethylamidophenylimide* (SCHMITT and ANDRESEN), 1882, A., 400.
- Chloroquinoneimide** (*dichlorazophenol*), constitution of (SCHMITT and BENNEWITZ), 1874, 260; (HIRSCH), 1879, A., 315; (SCHMITT), 1879, A., 924.
- diChloroquinonic acid***. See Chloranilic acid.
- Chlororesorcinol**. See Resorcinol.
- Chlorosalicylic acid**. See Salicylic acid.
- Chlorostannic acid** (MALLET), 1879, T., 524.
- Chlorostannates of the rare earths** (CLEVE), 1879, A., 601.
- $\omega\alpha$ -diChlorostyrene* (DYCKERHOFF), 1877, ii., 481.
- action of water on (ERLENMEYER), 1881, A., 418.
- Chlorosuberanecarboxylic acid** (DALE and SCHORLEMMER), 1881, T., 541.
- Chlorosuberic acid**, acid  $C_9H_5O_6$ , from (BAUER and GRÖGER), 1881, A., 894.
- Chlorosuccinic acid** (ANSCHÜTZ and BENNETT), 1882, A., 828.
- Chlorosuccinic anhydride** (PERKIN), 1882, T., 269; (ANSCHÜTZ and BENNETT), 1882, A., 828.
- o-Chlorosulphobenzoic acid* (HÜBNER and MAJERT), 1873, 1136.
- p-Chloro-m-sulphobenzoic acid* (CÖLLEN), 1876, ii., 412; 1879, A., 155; (CÖLLEN and BÖTTINGER), 1877, i., 82.
- Chlorosulphonic acid**. See Sulphonic acid.



- $\alpha$ -Chloroterebic acid** (ROSER), 1882, A., 717.
- Chloroterpene** (MEYER and SPITZER), 1876, ii., 514.
- di*Chlorotetrahydronaphthaquinol** (*di-chloronaphthydyne glycol*) (GRIMAU), 1873, 1034.
- Chlorotetramorphine**, product obtained from, by the action of silver nitrate and nitric acid (WRIGHT), 1873, 1088.
- Chlorothiocarbamide** (CLAUS), 1876, i., 572.
- Chlorothymoquinol dibenzoate**, *mono-* and *di-* (SCHULZ), 1882, A., 838.
- Chlorothymoquinone**, *mono-* and *di-* (ANDRESEN), 1881, A., 590.
- Chlorotiglic acid and its salts** (DEMARÇAY), 1877, ii., 591; (RÜCKER), 1878, A., 292; (FRIEDRICH), 1882, A., 945.
- Chlorotoluene**. See Toluene.
- Chlorotolueneazoxytoluene** (v. HOFMANN and GEYGER), 1873, 169.
- tri*Chlorotoluenephosphonic acid** (MICHAELIS and LANGE), 1876, i., 392.
- Chlorotoluenesulphonic acid**. See Toluenesulphonic acid.
- 6-Chloro-*m*-toluic acid**, transformation of amido-*m*-toluic acid into (REMSEN and KUHARA), 1882, A., 607.
- 2-Chloro-*p*-toluic acid** (v. GERICHTEN), 1878, A., 49.
- Chlorotoluidine**. See Toluidine.
- tetra*Chlorotolu-quinol and -quinone** (BRÄUNINGER), 1878, A., 147.
- 3:4:6-*tri*Chlorotoluquinone**, action of ammonia and amines on (v. KNAPP and SCHULTZ), 1882, A., 510.
- tri*Chlorotolyethylenbenzoic acid** (FISCHER), 1875, 155.
- tri-p*-Chlorotribenzylamine**, and its salts (JACKSON and FIELD), 1881, A., 804.
- Chlorotrihydrostrychnine**, *mono-*, *di-*, and *tri-* (RICHER and BOUCHARDAT), 1881, A., 293.
- Chlorotriphenylmethane**, constitution of the hydrocarbon derived from (v. HEMILIAN), 1878, A., 738.
- di*Chloro-*o*-triphenylmethanecarboxylic acid** (v. BAAYER), 1880, A., 655.
- Chlorotropic acid** (LADENBURG and RÜGHEIMER), 1880, A., 472.
- Chlorous acid**. See under Chlorine.
- tri*Chloro-*valerolactic acid***. See *tri*-Chloro-*a*-hydroxyvaleric acid.
- Chlorovanadates** (HAUTEFEUILLE), 1874, 131.
- di*Chlorovinyl ethyl oxide** (GEUTHER and BROCKHOFF), 1873, 867.
- tri*Chlorovinyl ethyl oxide** (HENRY), 1880, A., 232.
- Chloroxalamylne**. See Chlorobutylglyoxaline.
- Chloroxindole chloride**. See *di*Chlorindole.
- Chloroxyfulminoplatinums**, *mono-*, and *tri-* (v. MEYER), 1879, A., 374.
- $\omega$ -Chloroxylylene** (MAZZARA), 1880, A., 161.
- $\omega$ -Chloro-*m*-xylene** (GUNDELACH), 1876, ii., 513.
- Chloroxylypiden**, *mono-* and *di-* (ZININ), 1873, 489.
- Chloroxyethyline**. See Methylethylglyoxaline, chloro-.
- Chloro-*p*-xylo-2:5-quinol** (NIETZKI), 1880, A., 553.
- Chloro-*p*-xylo-2:5-quinol**, *mono-* and *di-*, and **chloro-*p*-xylo-2:5-quinone** (CARSTANJEN), 1882, A., 612.
- Chloroxysacchulide**, *di-* and *tri-* (SESTINI), 1882, A., 1182.
- Chlorozanzaloin** (TILDEN), 1875, 1270.
- Chocolate**, examination of (HERBST), 1882, A., 1139.
- estimation of theobromine in (WOLFRAM), 1879, A., 406.
- Choke-damp**, poisoning by (BIEFEL and POLECK), 1878, A., 906; 1881, A., 853.
- Cholamide** (HÜFNER), 1879, A., 949.
- Cholanic acid and its salts** (TAPPEINER), 1879, A., 388; (LATSCHINOFF), 1880, A., 722; (CLEVE), 1881, A., 750; (KUTSCHEROFF), 1881, A., 926.
- relation of, to cholecamphoric acid (LATSCHINOFF), 1880, A., 722.
- iso*Cholanic acid**, and its salts (LATSCHINOFF), 1882, A., 873.
- Cholecamphoric acid**. See Choleoidanic acid.
- Cholecyanin** (HEYNSIUS), 1875, 901.
- Cholestene** (*cholesterilin*) (WALITZKY), 1881, A., 401.
- Cholesteric acid**, and its salts (TAPPEINER), 1879, A., 388.
- Cholesterin** (*cholesterol*) (SCHULZE), 1873, 513, 920; (WALITZKY), 1877, i., 58; 1879, A., 135; (HESSE), 1878, A., 850; (SCHULZE and BARBIERI), 1882, A., 1202.
- amount of, in human brain and in hens' eggs (BENECKE), 1882, A., 78.
- density of (MÉHU), 1875, 247.
- action of nitric acid on (PREIS and RAYMAN), 1879, A., 634.
- action of potassium permanganate on (LATSCHINOFF), 1877, ii., 781.
- some neutral oxidation-products of (LATSCHINOFF), 1879, A., 135.

- Cholesterin** (*cholesterol*), acids derived from, and cholic acid from ox-bile, products of oxidation of (LATSCHINOFF), 1878, A., 590.  
 brain, derivatives of (WALITZKY), 1879, A., 135.  
 testing of (SALKOWSKI), 1874, 715.  
 separation of (SCHULZE), 1878, A., 612.  
 separation of, from fatty matter (COMMAILLE), 1876, i., 769.  
*mono-* and *di-nitro-* (PREIS and RAYMAN), 1879, A., 634.  
*isoCholesterin* (SCHULZE), 1873, 920, 1219.  
 specific rotatory power of (SCHULZE), 1879, A., 634.  
*paraCholesterin* from *Æthulium septicum* (REINKE and RODEWALD), 1882, A., 303.  
 formula of (HESSE), 1882, A., 730.  
**Cholesteryl chloride**, action of aniline, toluidine, and naphthylamine on (WALITZKY), 1879, A., 135, 376.  
 action of nitric acid on (PREIS and RAYMAN), 1879, A., 634.  
**Cholesterylaniline** (WALITZKY), 1879, A., 135, 376.  
**Cholesteryl- $\alpha$ -naphthylamine**, and *p*-toluidine (WALITZKY), 1879, A., 135, 376.  
**Cholestrophane**. See Dimethylparabanic acid.  
**Choletelin** (HEYNSIUS), 1875, 901; (LIEBERMANN), 1876, i., 407.  
 identity of urobilin and (STOKVIS; MALY), 1874, 993.  
**Choleverdin**, reducible product of (STOKVIS), 1873, 78.  
**Cholic acid** (BAUMSTARK), 1874, 162; (TAPPEINER), 1874, 256; (DESTREM), 1879, A., 333; (HÜFNER), 1879, A., 949.  
 containing solid fatty acids (LATSCHINOFF), 1881, A., 158.  
 and proteid compounds (BAUMSTARK), 1874, 257.  
 action of glycocine on (LANG), 1877, i., 481.  
 oxidation of (TAPPEINER), 1877, i., 213; 1879, A., 388; 1880, A., 55; (DESTREM), 1879, A., 333; (LATSCHINOFF), 1879, A., 810; 1880, A., 56, 562, 722; (CLEVE), 1881, A., 294, 749; (HAMMARSTEN), 1881, A., 624; (KUTSCHEROFF), 1881, A., 926.  
 from ox-bile, and the acids derived from cholesterin, products of oxidation of (LATSCHINOFF), 1878, A., 590.  
 a hydrocarbon from (DESTREM), 1879, A., 333.
- Cholic acid**, barium salt of (TAPPEINER), 1880, A., 55.  
 “**Chologlycollic acid**” (LANG), 1877, i., 481.  
**Choloidanic acid** (*cholcamphoric acid*) (LATSCHINOFF), 1880, A., 56, 722.  
**Choloidic acid** (LATSCHINOFF), 1880, A., 56.  
**Chondrin** (PETRI), 1879, A., 661.  
 constitution of (SCHÜTZENBERGER and BOURGEOIS), 1876, ii., 104.  
**Chondrodite** from the Tilly Foster iron mine, Brewster, New York (DANA), 1876, i., 532.  
 humite and ilvaite, isomorphism and chemical constitution of (WESKY), 1877, ii., 117.  
 “**Chondroglucose**” (PETRI), 1879, A., 661.  
*Chondrus crispus*, composition of (CHURCH), 1877, ii., 210.  
**Christianite**, simultaneous formation of chabazite and, under the influence of hot springs (DAUBRÉE), 1877, i., 444.  
**Christophite** from St. Agnes, Cornwall (COLLINS), 1881, A., 360.  
**Chromammonium compounds**. See under Chromium.  
**Chromates**. See under Chromium.  
**Chromatic value** of media other than water (GUTHRIE), 1879, A., 429.  
**Chromatology**, comparative vegetable (SORBY), 1874, 279.  
**Chrome alum** (POLIS), 1880, A., 444.  
 preparation of (LIELEGG), 1873, 848.  
 solutions of (GERNEZ), 1875, 238.  
 molecular equilibrium of solutions of (LECOQ DE BOISBAUDRAN), 1875, 427, 730.  
 precipitation of, by sodium carbonate (MILLS and BARR), 1882, T., 343, 344.  
 See also Alums.  
**Chrome black** on wool (REIMANN), 1879, A., 572.  
**Chrome-glue** (“*chromleim*”), use of the so-called (SCHWARZ), 1876, i., 804.  
**Chrome-green**, cheap (CASALI), 1875, 791.  
 Plessy's (KOETHE), 1875, 673.  
**Chrome iron ore**. See Chromite.  
**Chrome ores** of Greece (LANDERER), 1877, ii., 177.  
 of Hungary (HOFMANN), 1874, 450.  
 in New Caledonia (ANON.), 1878, A., 558.  
 composition of (KAYSER), 1876, ii., 657; (CHRISTOMANOS), 1877, ii., 512.  
**Chrome-red** (*Persian red*) (PRINVAULT), 1876, ii., 340.

- Chrome-steel** (BOUSSINGAULT), 1878, A., 772; 1879, A., 286.  
analysis of (GALBRAITH), 1877, ii., 357.
- Chrome crucible steel** (KERN), 1878, A., 177; 1879, A., 567.
- Chrome-yellow and chrome-orange** for paper staining, preparation of (ANON.), 1875, 923.
- Chromic acid.** See under Chromium.  
anhydride. See Chromium trioxide.  
chloride. See Chromium trichloride.  
oxide. See Chromium sesquioxide.
- Chromite** (*chrome iron ore*), nodules of, in meteoric iron from Cohahuila (SMITH), 1881, A., 705.  
of Japan (DIVERS), 1882, A., 21.  
occurrence of, in serpentine (HELLAND), 1877, ii., 120.  
constitution of (CHRISTOMANOS), 1877, ii., 120.  
estimation of chromium in (PHILLIPS), 1874, 289; (MORSE and DAY), 1881, A., 942.  
analysis of (CHRISTOMANOS), 1877, ii., 511.
- Chromium**, occurrence of, in platinum (VOGEL), 1874, 196.  
spectrum of the vapour of (LIVEING and DEWAR), 1881, A., 957; 1882, A., 254.  
specific volume of (THORPE), 1880, T., 391.  
specific or ebullition volume of (RAMSAY), 1879, T., 471.  
colour properties of (BAYLEY), 1881, T., 367.  
copper, nickel, cobalt, iron and manganese, colour properties and relations of (BAYLEY), 1880, T., 828; 1881, T., 362.  
action of sodium carbonate on (CHAPMAN), 1877, i., 489.  
and tungsten, addition of, to iron and steel (TENISON-WOODS and CLARKE), 1874, 1118.
- Chromium alloy with iron** (*chrome iron*) (GALBRAITH), 1877, ii., 357; (THOULET), 1881, A., 690.  
and other alloys (KERN), 1876, i., 794.  
and analogous compounds, preparation of (GEREER), 1877, ii., 709.  
new method for the decomposition of (SMITH), 1878, A., 683.  
some compounds analogous to (RISLER), 1878, A., 936.  
with mercury (MOISSAN), 1879, A., 693.  
with steel. See Chrome steel.
- Chromium salts**, absorption spectra of (VOGEL), 1879, A., 190; (BAYLEY), 1880, T., 835.
- Chromium salts**, action of, in presence of chlorates (GRAWITZ), 1879, A., 420.  
inactivity of, in producing aniline-black as compared with the action of vanadium-compounds (WITZ), 1879, A., 421.  
salts of mercury and (CLARKE and STERN), 1882, A., 293.  
reactions of (ETARD), 1875, 1164.
- Chromium arsenite** (NEVILLE), 1877, i., 283.  
bromide, hydrated (VARENNE), 1882, A., 280.  
preparation and properties of (MOISSAN), 1881, A., 685.  
chlorate, use of, in cotton printing (DÉPIERRE and TATARINOFF; SCHEURER), 1878, A., 824.  
chlorochromate, formation of, by the action of iodine on chromium dichloride (MACIVOR), 1874, 26.  
dichloride (*chromous chloride*), preparation and properties of (MOISSAN), 1881, A., 684.  
action of iodine on (MACIVOR), 1874, 26.  
trichloride (*chromic chloride*), preparation of (WATTS and BELL), 1878, T., 444.  
formation of permanently green crystals of (MENGEOT), 1881, A., 352.  
*sesquichloride* and oxychloride (MOISSAN), 1880, A., 793.  
oxychloride. See Chromyl dichloride.  
iodide, preparation and properties of (MOISSAN), 1881, A., 685.  
oxides (MOISSAN), 1881, A., 74.  
dioxide (HINTZ), 1874, 133; (SCHIFF), 1874, 443.  
*sesquioxide* (*chromic oxide*) (WILM), 1881, A., 63.  
action of reagents on (MOISSAN), 1881, A., 21.  
action of chlorine on (MOISSAN), 1880, A., 793.  
rehydration of (CROSS), 1879, T., 797.  
as a mordant (RENAUD), 1874, 1191.
- trioxide** (*chromic anhydride*), action of, on iodine (WALZ), 1873, 141.  
compound of, with potassium fluoride (VARENNE), 1879, A., 1016.  
preparation of (DUVILLIER), 1873, 39; (FICINUS), 1874, 546.  
reaction of, with sulphuric acid (CROSS and HIGGIN), 1882, T., 113.  
conversion of, into chromic acid in the wet way (WAGNER), 1878, A., 618.

- Chromic acid**, conversion of chromic hydroxide and chromic chlorate into (ANON.), 1877, ii., 846.  
 solution for batteries (MÜLLER), 1874, 429.  
 as an oxidising agent (THOMSEN), 1875, 227.  
 as a test for malic acid (PAPASOGLI and POLI), 1877, ii., 807.  
 direct combination of, with wool and silk; and on its application to dyeing, and to the analysis of wines (JACQUEMIN), 1874, 1192.  
 a new double salt of (HENSEN), 1879, A., 887; 1880, A., 10.  
 alum, reasons why it cannot be formed (FLEISCHER), 1873, 1005.  
 chloro-. See *Chromyl dichloride*.
- Chromates** (ETARD), 1877, ii., 847; (SCHILLERUD), 1879, A., 298.  
 crystallised, preparation of (BOURGEOIS), 1881, A., 352.  
 thermic recherches on (MORGES), 1878, A., 765, 832.  
 volume-constitution of (SCHRÖDER), 1879, A., 768; 1881, A., 137.  
 action of ammonia on (M. M. and P. RICHTER), 1882, A., 1029.  
 behaviour of carbohydrates and of gums towards, under the influence of light (EDER), 1879, A., 911.
- Chromic acid**, detection of (DONATH), 1879, A., 401.  
 estimation of (HINMAN), 1878, A., 607.
- Chromium phosphate** (KAEMMERER), 1874, 1005.  
 use of, in analysis and in the arts (CARNOT), 1882, A., 998.  
*mono-* and *sesqui-selenides* (MOISSAN), 1880, A., 527.  
 sulphate, preparation and properties of (MOISSAN), 1881, A., 684.  
 sulphates, insoluble (CROSS and HIGGIN), 1882, T., 113.  
 aluminium, iron and manganese *sesquisulphates* (ETARD), 1879, A., 594.  
 potassium sulphate. See *Chrome alum* and *Alums*.  
 sulphides (GRÖGER), 1881, A., 225; 1882, A., 15.  
*mono-* and *sesqui-sulphides* (MOISSAN), 1880, A., 527.
- Chromammonium salts** (JÖRGENSEN), 1879, A., 124; 1880, A., 10; 1882, A., 468, 1167; (CHRISTENSEN), 1881, A., 1104.
- Chromium potassium cyanides** (MOISSAN), 1882, A., 485.
- Chromium**, estimation and separation:—  
 estimation of (JEAN and PELLET), 1877, ii., 354; (SELL), 1879, T., 292; (WILM), 1880, A., 188; (TREADWELL), 1882, A., 1234.  
 estimation, volumetric, of, in presence of ferric oxide and alumina (DONATH), 1881, A., 760.  
 estimation of, in chrome ores, by Dittmar's method (ANON.), 1877, i., 108.  
 estimation of, in chrome iron ore (PHILLIPS), 1874, 289; (MORSE and DAY), 1881, A., 942.  
 estimation of, in iron and steel (BLAIR), 1877, ii., 802; (ARNOLD), 1881, A., 646.  
 estimation of, in steel, and in its alloys with iron (SCHÖFFEL), 1880, A., 288.  
 separation of, from aluminium (CARNOT), 1881, A., 1081.  
 separation of, from uranium (GIBBS), 1874, 93.  
 separation of, from uranium and iron (DITTE), 1877, ii., 926.
- Chromium blue** (BONG), 1878, A., 618.
- Chromium garnet** (KLIEN), 1879, A., 361.
- "Chromleim."** See *Chrome glue*.
- Chromocyanic acid** (DESCAMPS), 1882, A., 156.
- Chromograph** (WARTHA), 1879, A., 836.
- Chromyl dichloride** (*chromyl oxychloride*; *chlorochromic acid*) (MOISSAN), 1880, A., 793.  
 physical properties of (THORPE), 1880, T., 362.  
 action of, on anthracene (HALLER), 1877, ii., 494.  
 as an oxidising agent (ETARD), 1877, i., 584; 1879, A., 320; 1881, A., 581.
- Chrysamic acid**. See *Chrysazin*, *tetranitro-*.
- Chrysanic acid**. See *Benzoic acid*, 3:5:4-*dinitramido-*.
- Chrysarobin** (ATTFIELD), 1875, 1269.  
 in "Goa powder" (LIEBERMANN and SEIDLER), 1879, A., 326; 1882, A., 858.  
 oxidation of (LIEBERMANN and SEIDLER), 1882, A., 858.
- Chrysazin** (1:3'-*dihydroxyanthraquinone*) (LIEBERMANN and GIESEL), 1876, i., 711; (LIEBERMANN), 1877, i., 611; 1879, A., 538; (LIEBERMANN and DEHNST), 1879, A., 942.  
 synthesis of, from anthracene (LIEBERMANN), 1879, A., 260.



- Chrysazin** (1:3'-*dihydroxyanthraquinone*), constitution of (LIEBERMANN and DEHNST), 1879, A., 942.  
 action of nitric acid on (LIEBERMANN and GIESEL), 1876, ii., 90.  
 series, anthracene-derivatives of the (LIEBERMANN), 1879, A., 537.
- Chrysazin, tetramido- (hydrochrysamide)** (LIEBERMANN), 1877, i., 611.  
 nitro- (LIEBERMANN), 1877, i., 612.  
 tetranitro- (*chrysamnic acid*) and its salts (LIEBERMANN and GIESEL), 1876, i., 711; ii., 90; (LIEBERMANN), 1877, i., 611.
- Chrysazol** (*α-dihydroxyanthracene*) (LIEBERMANN), 1879, A., 537.
- "Chrysean,"** a new sulphur-derivative of hydrocyanic acid (WALLACH), 1874, 1086.
- Chrysene** (SCHMIDT), 1875, 254; (BERTHELOT), 1875, 760, 1190; 1876, i., 242.  
 in idryl (GOLDSCHMIEDT), 1878, A., 155.  
 preparation of (SCHMIDT), 1874, 987.  
 synthesis of (GRAEBE and BUNGENER), 1879, A., 807.  
 fluorescent relations of (MORTON), 1875, 469.  
 colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.  
 derivatives of (ADLER), 1880, A., 263.
- Chrysene, dibromo-, di- and tri-chloro-, and mono-, di-, and tetra-nitro-** (SCHMIDT), 1874, 987.  
*tribromodinitro-* (ADLER), 1880, A., 263.
- Chrysenin** (PHIPSON), 1875, 91.
- Chryseudiene** (GLADSTONE and TRIBE), 1882, T., 16.
- Chrysin** (*chrysinic acid*) and its derivatives (PICCARD), 1874, 1165; 1877, ii., 342.  
 presence of, in the buds of *Populus monilifera* or *balsamifera* (PICCARD), 1873, 1236.  
 dibromo-, dichloro-, diiodo-, and dinitro- (PICCARD), 1873, 1236.
- Chrysocolla** (HUTCHINGS), 1877, ii., 575; (ROSTER), 1878, A., 281; (LIVERSIDGE), 1881, A., 992.  
 from Chili, analyses of (PELLEGRINI), 1880, A., 97.  
 aluminous, from Utah (SANTOS), 1877, ii., 854.  
 analysis of (HUTCHINGS), 1877, i., 55.  
 fluorescent relations of (MORTON), 1873, 235.
- Chrysoidine** (*benzenazo-m-phenylenediamine*) (WITT), 1877, ii., 243, 457; 1879, T., 180; (v. HOFMANN), 1877, ii., 326; (NÖLTING and v. SALIS), 1881, A., 725.  
 absorption spectrum of (LANDAUER), 1881, A., 591.  
 an antiphotogenic colour (BARDY), 1878, A., 613.
- Chrysoidinesulphonic acid** and some of its salts (RUHEMANN), 1882, A., 392.
- Chrysolin**, a yellow dye derived from resorcinol (REVERDIN), 1877, ii., 889.
- Chrysolite.** See Olivine.
- Chrysophaic acid** (LIEBERMANN and FISCHER), 1876, i., 399; (LIEBERMANN), 1877, i., 610.  
 amido-, and nitro- (LIEBERMANN), 1877, i., 611.  
*tetranitro-*, and its salts (LIEBERMANN and GIESEL), 1876, ii., 90; (LIEBERMANN), 1877, i., 611.
- Chrysoquinone** (SCHMIDT), 1874, 987; (GRAEBE), 1874, 989.  
 constitution of (JAPP and STREATFIELD), 1882, T., 158.  
 distillation of, with soda-lime (GRAEBE), 1873, 635.  
 action of benzaldehyde on, in presence of ammonia (JAPP and STREATFIELD), 1882, T., 157.
- Chrysoquinonedisulphuric acid**, barium salt of, and dibromo-, and dinitro- (ADLER), 1880, A., 263.
- Churning** (SOXHLET), 1876, ii., 537; (WINKEL), 1880, A., 75.
- Chyle**, analysis of supposed, from a lymphatic fistula (HENSEN), 1875, 902.
- Cichorium Intybus**, a new glucoside in the flowers of (NIETZKI), 1877, i., 477.
- Cider**, freezing point of (RAOULT), 1880, A., 523.
- Cigars**, Virginian, analysis of the smoke of (SCHWARZ), 1878, A., 188.
- Cinchamidine** (HESSE), 1881, A., 1045.
- Cinchene** and *apocinchene* (KOENIGS), 1882, A., 224.
- Cincholepidine.** See 4'-Methylquinoline.
- Cincholine** (HESSE), 1882, A., 1114.
- Cinchomeronic acid** (*pyridine-3:4-dicarboxylic acid*) and its salts (WEIDEL), 1875, 89; (WEIDEL and v. SCHMIDT), 1879, A., 947; (HOOGEWERFF and VAN DORP), 1880, A., 405, 896; 1881, A., 611; (v. GERICHTEN), 1881, A., 110; (SKRAUP), 1881, A., 290; (FÜRTH), 1882, A., 230.  
 formation of, from quinine (WEIDEL and v. SCHMIDT), 1879, A., 947.

- Cinchomeronic acid** (*pyridine-3:4-dicarboxylic acid*), behaviour of, on heating (HOOGWERFF and VAN DORP), 1882, A., 311.  
See also Apophyllenic acid.
- isoCinchomeronic acid.** See Pyridine-2:5-dicarboxylic acid.
- Cinchona alkaloids.** See under Alkaloids.
- Cinchonamine** and its salts (ARNAUD), 1882, A., 229.
- Cinchonic acid** (*quinoline-4'-carboxylic acid*) and its salts (WEIDEL), 1875, 88; (KOENIGS), 1879, A., 471; (WEIDEL and V. SCHMIDT), 1879, A., 947; (WEIDEL and BRUX), 1882, A., 1304.  
constitution of (SKRAUP), 1880, A., 410.  
oxidation of (SKRAUP), 1879, A., 656; 1880, A., 409.
- Cinchonichine** (DRYGIN), 1879, A., 169.
- Cinchonidine** (HESSE), 1876, i., 608; 1878, A., 435.  
*di*bromo- (HESSE), 1878, A., 436.
- apoCinchonidine** (HESSE), 1881, A., 617.
- Cinchonidine and cinchonine** and its derivatives. See under Alkaloids.
- $\alpha$ -Cinchoninesulphonic acid** and its salts (WEIDEL and COBENZL), 1881, A., 742.
- $\beta$ -Cinchoninesulphonic acid** and its derivatives (WEIDEL), 1882, A., 225.
- Cinchotenicine** (HESSE), 1879, A., 332.
- Cinchotenidine**, and its salts (SKRAUP), 1879, A., 71; (SKRAUP and VORTMANN), 1879, A., 949.
- Cinchotenine** (SKRAUP), 1878, A., 157; 1879, A., 948.
- Cinchotine.** See under Alkaloids.
- Cinders** from Etna (COSSA), 1879, A., 904.
- Cineol.** See under Terpenes.
- Cinnabar** (FRENZEL), 1878, A., 708.  
deposits, genesis of (CHRISTY), 1880, A., 221.  
from California (BERTRAND), 1879, A., 440.  
occurrence of, in California and Nevada (BLAKE), 1881, A., 689.  
from Oregon (DABNEY), 1877, i., 284.  
vapour-density of (V. and C. MEYER), 1879, A., 767.  
action of light on (HEUMANN), 1874, 963; 1875, 42.  
desulphurisation of, at low temperatures (HEUMANN), 1874, 963.  
analysis of (GRAMP), 1875, 913.  
See also Mercuric sulphide.
- Cinnamaldehyde**, formation of, during fibrin-pancreas digestion (OSSIKOWSKY), 1880, A., 469.  
acids from (PERKIN), 1877, i., 403.
- Cinnamene.** See Styrene.
- Cinnamenyl-.** See Styryl-.
- Cinnamethylacrylic acid.** See Phenyl-pentenoic acid.
- Cinnamhydroxylamine** (*cinnamhydroxamic acid*), preparation of (ROSTOSKI), 1876, i., 272.
- Cinnamic acid** ( *$\beta$ -phenylacrylic acid*) (V. MILLER), 1876, i., 612, 939; 1878, A., 159.  
from benzaldehyde (PERKIN), 1877, i., 389.  
presence of, in tea (WEPPE), 1875, 388.  
synthesis of, from ethylic malonate (CONRAD), 1881, A., 168.  
action of hydrochloric acid on (KRAUT and MERLING), 1881, A., 425.  
relation of, to the indigo group (V. BAEYER), 1881, A., 274.  
polymerised (FITTIG), 1880, A., 121.  
hydrocarbons obtained from the homologues of (PERKIN), 1877, ii., 660.  
additive products of (FITTIG), 1877, ii., 431; (FITTIG and BINDER), 1879, A., 378.  
derivatives (ERLENMEYER), 1882, A., 191.  
barium and calcium salt of (REBUFFAT), 1881, A., 598.  
calcium salt of, products of the dry distillation of (ENGLER and LEIST), 1873, 901.
- Cinnamic acid**, *o*-amido-, separation of, from *p*-amido- (TIEMANN and ORPERMANN), 1881, A., 171.  
*m*-amido-, and its hydrochloride (MAZZARA), 1880, A., 163.  
*o*-, *m*-, and *p*-amido-, and the action of reagents on (TIEMANN and ORPERMANN), 1881, A., 170.  
 $\alpha$ - and  $\beta$ -bromo- (BARISCH), 1880, A., 43.  
(*phenylbromacrylic acids*), action of concentrated sulphuric acid on (LEUCKART), 1882, A., 615.  
 $\alpha$ - and  $\beta$ -bromo-*p*-nitro- (MÜLLER), 1882, A., 842.  
*di*bromonitro- (V. BAEYER), 1881, A., 274.  
 $\alpha$ -chloro- (JUTZ), 1882, A., 1073.  
*o*-nitro-, preparation of (V. BAEYER), 1881, A., 274.  
*m*-nitro- (SCHIFF), 1879, A., 321.  
synthesis of (SCHIFF), 1879, A., 157.

- Cinnamic acid**, *p*-nitro-, nitration of (FRIEDLANDER), 1882, A., 401.  
 derivatives of (DREWSSEN), 1882, A., 846.  
*o*- and *p*-nitro-, and their derivatives (MÜLLER), 1882, A., 840.  
*o*-Cinnamocarbonic acid. See *o*-Carboxycinnamic acid.  
**Cinnamon**, mineral constituents of (HEHNER), 1880, A., 360.  
 examination of (HERAEUS), 1878, A., 823.  
**Cinnamon-bark**, Japanese (MARTIN), 1879, A., 320.  
**Cinnamon leaves**, oil of (SCHÄR), 1882, A., 1300.  
**Cinnamone**. See Distyryl ketone.  
**Cinnamyl alcohol** (*cinnyllic alcohol*), action of hydriodic acid on (TIE-MANN), 1878, A., 579.  
 reduction of (HATTON and HODGKINSON), 1881, T., 319.  
**Cinnamyl chloride** (CLAISEN and ANTWEILER), 1881, A., 169.  
 action of hydroxylamine on (ROSTOSKI), 1876, i., 272.  
**Cinnamyl cyanide** (CLAISEN and ANTWEILER), 1881, A., 169.  
**Cinnamyl methyl ketone**. See Styryl methyl ketone.  
**Cinnamylformic acid**. See Styryl-glyoxylic acid.  
**Cinnamyltropeine** and its salts (LADENBURG), 1880, A., 715.  
**Cinnamyltriethylalkeine**. See Diethyl-amidoethyl cinnamate.  
**Cinnamyl-**. See also Styryl-.  
**Circuit**. See Electrochemistry.  
**Citraconamide** and **citraconanilide** (STRECKER), 1882, A., 1281.  
**Citraconanil**. See Citraconic acid, phenylimide of.  
**Citraconic acid** (BARBAGLIA), 1874, 787; (BÖTTINGER), 1877, i., 591; (FITTIG and KRUSEMARK), 1881, A., 416; (ANSCHÜTZ), 1882, A., 829.  
 electrolysis of (AARLAND), 1873, 378, 1221.  
 and its isomerides, etherification of (MENSCHUTKIN), 1882, A., 383.  
 reaction of, with ferrous chloride (AARLAND), 1873, 377.  
 action of zinc dust and alcohol on (BÖTTINGER), 1877, i., 590.  
 relation of, to mesaconic acid (FITTIG), 1877, ii., 430.  
 phenylimide of (*citraconanil*) (STRECKER), 1882, A., 1281.  
*citraconibromomethylsuccinic acid* from (FITTIG), 1877, ii., 738.  
**Citraconic acid**, *trichloroisobutyric acid* from (GOTTLIEB), 1874, 356; 1876, i., 561.  
 the crotonic acid from (PREHN), 1875, 632; (FITTIG), 1877, ii., 735.  
 additive products of (FITTIG), 1877, ii., 737.  
 derivatives of (PETRI), 1881, A., 1032; (STRECKER), 1882, A., 1281.  
 barium salt of (KAEMMERER), 1874, 253.  
 sodium salt of, action of chlorine on (MORAWSKI), 1876, i., 562.  
**Citraconic acid**, bromo- (BOURGOIN), 1879, A., 457.  
 an acid,  $C_5H_4O_4$ , from (BOURGOIN), 1879, A., 1037.  
 elimination of bromine from (BOURGOIN), 1879, A., 1037.  
 chloro- (GOTTLIEB), 1874, 358.  
**Citraconic anhydride** (MORRIS), 1880, T., 12; (ANSCHÜTZ), 1881, A., 35; 1882, A., 829; (PETRI), 1881, A., 1032.  
 conversion of, into xeronic anhydride (FITTIG), 1877, i., 64.  
 bromo- (FITTIG and KRUSEMARK), 1881, A., 416.  
**Citraconic chloride** (STRECKER), 1882, A., 1281.  
**Citraconic ethers** (PERKIN), 1881, T., 554.  
**Citraconthiocarbamic acid** (PIKE), 1874, 50.  
**Citramalic acid** (*hydroxy- $\alpha$ -methylsuccinic acid*,  *$\beta$ -hydroxypyrotartaric acid*) and its salts (MORAWSKI), 1879, A., 707.  
 and its constitution and reactions (MORRIS), 1880, T., 6.  
 constitution of isomerides of (MORRIS), 1880, T., 13.  
 chloro-, non-chlorinated derivatives of (MORAWSKI), 1875, 142.  
**Citratartaric acid**. See Dioxypyrotartaric acid.  
**Citrene**. See Limonene under Terpenes.  
**Citric acid** and its derivatives (SARANDINAKI), 1873, 496; (KAEMMERER), 1874, 252; (HUNAEUS), 1877, i., 456; (FLEISCHER), 1877, i., 591; (ANDREONI), 1880, A., 877.  
 presence of, in *Chelidonium majus* (HAITINGER), 1882, A., 82.  
 from the *Leptomeria acida* (*Australian currant*) (RENNIE), 1881, A., 1033.  
 a constituent of the juice of unripe mulberries (WRIGHT and PATTERSON), 1878, T., 78.

- Citric acid**, synthesis of (GRIMAUx and ADAM), 1880, A., 801; (KEKULÉ), 1881, A., 256.  
 abnormal crystals of (CLOËZ), 1882, A., 498.  
 chemistry of (WARINGTON), 1875, 925.  
 thermochemical researches on (BERTHELOT and LUGININ), 1877, i., 681.  
 decomposition of, by distillation (ANSCHÜTZ), 1881, A., 35.  
 action of chlorine gas on (CLOËZ), 1882, A., 498.  
 action of concentrated hydrochloric acid on, at a high temperature (HERGT), 1874, 457.  
 action of, on phosphates (GRUPE and TOLLENS), 1881, A., 759.  
 action of sodium on (CLAUS), 1875, 750.  
 substitution-products of (PAWOLLECK), 1876, i., 375.  
 testing for, in fruit-juices (SABANIN and LIASKOWSKI), 1878, A., 343.  
 titration of (WARINGTON), 1875, 929.  
 estimation of, in citric acid liquors, and in lemon, bergamot, and lime juice (WARINGTON), 1875, 934, 942.  
 estimation of, in fruit juices (FLEISCHER), 1874, 1181.  
 estimation of, in wine (NESSLER and BARTH), 1882, A., 1000.  
 double salts of, action of the constituents on supersaturated solutions of (THOMSON and BLOXAM), 1882, T., 385.  
 alkali salts in solution, action of hydrochloric acid on (THOMAS), 1878, T., 374.  
 ammonium salts of (LANDRIN), 1878, A., 785; 1882, A., 604; (SESTINI), 1880, A., 104.  
   use of, in examination of phosphates in manure (WAGNER and HERCHER), 1881, A., 846.  
 ammonio-ferric salt of (MÉHU), 1874, 43.  
 bismuth and iron salts of (ROTHER), 1876, ii., 173.  
 calcium salt of, water retained by, at 100°, and solubility of (WARINGTON), 1875, 938.  
   analysis of commercial (WARINGTON), 1875, 940.  
 iron salt of (MÉHU), 1874, 43.  
 potassium boron salt of (SCHEIBE), 1881, A., 89.  
 potassium and sodium salts of (PUSCH), 1877, ii., 883.
- Citric acid**, sodium salt of, solubility of certain salts, in solutions containing (LEA), 1874, 964.  
**Citric acid**, nitro- (CHAMPION and PELLET), 1876, i., 566.  
**Citric anhydride** (FRANCHIMONT), 1874, 569.  
**Citric group** of acids, constitution of the (HENRY), 1875, 1176.  
**Citrometer** (WARINGTON), 1875, 930.  
**Citronella oil**, proximate constituents of (WRIGHT), 1874, 1, 318.  
   oxidation of, by air (KINGZETT), 1876, i., 243.  
**Citronellal**, reactions of (WRIGHT), 1874, 319.  
**Citrotriarnide**, amido- (KAEMMERER), 1875, 1178.  
*Citrus Limetta*. See Limes.  
**Cladonic acid** (*β-usnic acid*) (PATERNO), 1882, A., 1080.  
*Clandestina rectiflora*, stearoptene from the flowers of (V. HARTSEN), 1873, 513.  
**Clarite** (*luconite*) (WEISBACH), 1875, 547; (V. SANDBERGER), 1875, 740; (FRENZEL), 1878, A., 708.  
**Clay goods** (ANON.), 1881, A., 477.  
   difference between loam and (ANON.), 1880, A., 823.  
   zinc-bearing, from Pulaski Co., Virginia (HEYWARD), 1882, A., 24.  
   suspension of, in water (DURHAM), 1875, 37.  
   blue matter occurring in (THENARD), 1875, 1241.  
   edible (ANON.), 1879, A., 89.  
     from New Zealand (MUIR), 1878, A., 120.  
   Grossahnerode (ANON.), 1879, A., 89.  
   red (CHURCH), 1875, 872.  
   silt, analysis of (HILGARD), 1874, 1103.  
   estimation of, in arable soils (SCHLESING), 1874, 1010.  
   See also under Agricultural Chemistry.  
**Clay-ironstones** containing pyrites, estimation of iron in (STOCK and JACK), 1875, 383, 783.  
**Clays** (ANON.), 1879, A., 988; 1880, A., 155; 1881, A., 324.  
   constitution of (SCHLESING), 1874, 1010, 1071, 1145.  
   composition of (SNEELUS), 1878, A., 921.  
   crystalline constituents of clay slates and (CREDNER), 1875, 873.  
   development of heat on adding water to clay slate and (SKEY), 1875, 530.  
   plasticity and shrinking of (BISCHOF), 1875, 1298.



- Clays**, cohesive power of (BISCHOF), 1878, A., 536.  
 action of quartz-sand and lime on, in the firing process (ARON), 1876, i., 448.  
 fire- (BISCHOF), 1874, 300.  
 from Carniola (PATERA), 1873, 952.  
 resisting powers of various (BISCHOF), 1873, 951.  
 behaviour of, in contact with iron slag at a high temperature (BISCHOF), 1873, 1269.  
 quantitative analysis of (KERN), 1877, ii., 356.  
 French and German plastic, composition of (FISCHER), 1878, A., 691, 761, 921.  
 for porcelain, composition of (SEGER), 1881, A., 324.  
 Chinese, for porcelain, composition of (KALMANN), 1876, ii., 446.  
 Japanese, for porcelain (v. GÜMBEL), 1878, A., 559.  
 Limoges, for porcelain (ANON.), 1879, A., 87.  
 stoneware, composition of (ANON.), 1879, A., 87.  
 analyses of (ANON.), 1879, A., 87.  
**Clayslate needles**, small (PABST), 1882, A., 483.  
**Clay-soils**, physico-chemical analysis of (SESTINI), 1880, A., 511.  
**Cleopatra's needle**, composition of (WIGNER), 1879, A., 445.  
**Cleveite** (v. NORDENSKIÖLD), 1879, A., 364.  
**Clinochlore** from Chester in Pennsylvania (NEMINAR), 1875, 545.  
 See also Chlorite.  
**Clinophrite** (SINGER), 1881, A., 370.  
**Clintonite**. See Seybertite.  
**Cloth**, behaviour of vegetable and animal fibre during the carbonisation of wool and (WIESNER), 1876, ii., 563.  
**Cloth factories**, effluent water from (SCHWAMBOEN), 1876, i., 824.  
**Clouds**, dust and fog, relations between (AITKEN), 1881, A., 970.  
**Clover**. See under Agricultural Chemistry.  
**Clove-oil**, hydrocarbons from (BECKETT and WRIGHT), 1876, i., 6.  
 action of baryta on (CHURCH), 1875, 113.  
 adulteration of (JACQUEMIN), 1876, i., 760.  
**Coagulation**, acceleration of, by vegetable parchment (SCHMIDT), 1873, 186.  
**Coal** (REINSCH), 1881, A., 107.  
**Coal**, brown, of the Banerberg, near Bischoffsheim, on the Rhone (HILGER), 1877, ii., 850; 1878, A., 202.  
 Canadian (HOFFMANN), 1881, A., 547.  
 from Cape Breton (HOW), 1874, 325.  
 from New South Wales, composition of (LIVERSIDGE), 1881, A., 980; (DIXON), 1881, A., 983.  
 boghead, from Resiutta (BUCHNER), 1881, A., 688.  
 Russian (SCHEURER-KESTNER and MEUNIER-DOLLFUS), 1874, 239; 1875, 107; (KERN), 1875, 737, 1241.  
 from the Island of Suderö (BEGHIN and MENE), 1876, ii., 56.  
 varieties of (INOSTRANZEFF), 1881, A., 357.  
 and cellulose (BEVAN and CROSS), 1882, A., 31.  
 composition of (GUIGNET), 1879, A., 602; (HELM), 1882, A., 931.  
 composition and technical properties of (HILT), 1873, 1269.  
 artificial formation of (FREMY), 1879, A., 896.  
 heating power of brown (GERLAND), 1878, A., 349.  
 calorific power and classification of (GRUNER), 1875, 295.  
 spontaneous ignition of (HAEDICKE), 1881, A., 482.  
 inflammability of, and a new compressed coal (MEIDINGER), 1876, i., 135.  
 can't the combustion of, be promoted by the addition of water? (ANON.), 1874, 397.  
 development of heat on adding water to (SKEY), 1875, 530.  
 chlorides contained in certain (GERLACH), 1873, 302.  
 gases enclosed in (v. MEYER), 1873, 483.  
 cannel, gases enclosed in (THOMAS), 1876, ii., 144.  
 gases enclosed in, from the South Wales Basin (THOMAS), 1875, 793.  
 gases evolved by boring into (THOMAS), 1875, 793.  
 condition in which sulphur exists in (WALLACE), 1880, A., 708.  
 condition of sulphur in, and its relation to coking (DROWN), 1882, A., 780.  
 action of oxygen on (JAZUKOWITSCH), 1876, i., 894.  
 oxidation of, by means of nitric acid and potassium chlorate (NAKAMURA), 1879, T., 785.

**Coal**, analyses of (SLOANE), 1878, A., 448.  
 chemical valuation of (WITTSTEIN), 1876, i., 759; ii., 659.  
 analysis of brown (HILGER), 1877, ii., 850.  
 estimation of ash in (MUCK), 1880, A., 590; (WAGNER), 1881, A., 196.  
 estimation of sulphur in (ESCHKA), 1874, 1007; (STOCK), 1875, 383; (MORGAN), 1877, ii., 218; (NAKAMURA), 1879, T., 785; (ROLLER), 1879, A., 974; (DROWN), 1881, A., 645.  
 See also Anthracite, Coke, Fuel, and Lignite.  
**Coal-ashes**, amount of phosphoric acid in (LE CHATELIER and DURAND-CLAYE), 1873, 1066.  
**Coal-dust**, artificial fuel from (LOISEAU), 1873, 420.  
**Coal-gas**, the ammonia-soda process in conjunction with the manufacture of (ANON.), 1879, A., 837.  
 new products from (THOMPSON), 1878, A., 404.  
 estimation of residues from the manufacture of (SESTINI and FUNARO), 1882, A., 1181.  
 detection of, in earth (KÖNIGS), 1880, A., 684.  
 composition of (BERTHELOT), 1876, ii., 183; (DITMAR), 1877, i., 230.  
 of London, composition of (HUMPHIDGE), 1877, i., 621.  
 purification of (BUNTE), 1878, A., 178; (SCHWARZ), 1878, A., 179; (GÖBEL), 1879, A., 986; (ANON.), 1882, A., 1331.  
 purification of, by means of bog iron ore of Budin (VOLMAR), 1874, 396.  
 continuous process for purifying, from sulphur and ammonia (HARCOURT and FISON), 1873, 1270.  
 of different qualities, heating powers of (WALLACE), 1880, A., 766.  
 boiling and heating with (BUHE), 1882, A., 115.  
 effect of india-rubber tubes on the illuminating power of (ZULKOWSKI), 1873, 300; (VULPIUS), 1879, A., 188.  
 behaviour of, when heated out of contact with the air (BLOCHMANN), 1875, 137.  
 action of bacteria on (HATTON), 1881, T., 255.  
 action of palladium, rhodium, and platinum on (WILM), 1881, A., 706.

**Coal-gas**, some products of the action of red fuming nitric acid on (AKESTORIDES), 1877, ii., 287.  
 products of combustion of (HEISCH; WIGNER), 1877, ii., 948; (WRIGHT), 1879, T., 42; 1880, T., 422.  
 production of sulphuric acid by the combustion of (YOUNG), 1877, ii., 110, 948; 1880, A., 355.  
 arrangement for the use of, as a means of obtaining high temperatures (FORQUIGNON and LECLERC), 1873, 471.  
 cost of lighting and heating by petroleum and (ANON.), 1877, ii., 949.  
 new method of lighting by (BÖTTGER), 1874, 727.  
 destruction of leather by (CHURCH), 1877, ii., 949; (NICHOLS), 1880, A., 836.  
 presence of benzene in (BERTHELOT), 1877, ii., 447.  
 sulphur in (WERIGO), 1876, ii., 217.  
 sulphurous impurity in (HARCOURT), 1873, 299.  
 of high and low illuminating power, condition of the impurities in (TICHBORNE), 1874, 1189.  
 poisoning by (BIEFEL and POLECK), 1878, A., 906; 1881, A., 853.  
 effect of, on plants. See under Agricultural Chemistry.  
 test for carbon disulphide and carbonic anhydride in (SLOANE), 1882, A., 107.  
 estimation of ammonia in (HOUZEAU), 1873, 409.  
 estimation of ethylene and benzene-vapour in (KNÜBLAUCH), 1881, A., 850.  
 estimation of sulphur in (ANON.), 1876, ii., 657; (BRÜGELMANN), 1877, i., 492, 739, 741; (KNÜBLAUCH), 1882, A., 1326.  
 See also Gas, illuminating-  
**Coal-gas retorts**, ash of hard carbon from (VAN SLOOTEN), 1877, i., 355.  
**Coal-tar**, composition and properties of (BEHRENS), 1873, 419.  
 composition and physiological effects of products of (DUMAS), 1875, 280.  
 aniline and its homologues, etc., in (SMITH), 1874, 853.  
 isomeric cresols in (SOUTHWORTH), 1874, 61.  
 diphenyl in (BÜCHNER), 1875, 637.  
 ethylic alcohol in (WITT), 1879, A., 136.  
 hydrocarbon,  $C_{18}H_{12}$ , from (BURG), 1877, i., 96.

**Coal-tar**, hydrocarbon from, isomeric with anthracene (FITTING and OSTERMAYER), 1873, 177, 892.  
 a hydrocarbon from the least volatile portions of (RASENACK), 1874, 259.  
 methylanthracene in (JAPP and SCHULTZ), 1877, ii., 624.  
 xylenes in (JACOBSEN), 1877, ii., 600.  
 solubility of some constituents of (DE BECHI), 1880, A., 258.  
 brown, products from (ADLER), 1880, A., 263.  
   decomposition of, at a red heat (LIEBERMANN and BURG), 1878, A., 861.  
   use of, in the preparation of alkaloids, etc. (BOIRAUX and LÉGER), 1875, 1264.  
   antiseptic power of the heavy oils from (DUSART), 1874, 1189.  
   estimation of anthracene in (NICOL), 1876, ii., 553.  
**Coal-tar dyes**. See under Colouring matters.  
**Cobalt**, auriferous, from Grant Co., Oregon, analysis of (BRYAN), 1877, ii., 854.  
 ores, analysis of (FRESENIUS), 1873, 1261; 1874, 1180.  
 malleable, preparation of, and its application in the pure state (FLEITMANN), 1879, A., 563.  
 absorption spectrum of (BAYLEY), 1880, T., 834.  
 electrodeposition of (BÖTTGER), 1877, ii., 375; (GAIFFE), 1878, A., 1019.  
 magnetisation of, molecular changes, which accompany the (BARRETT), 1874, 766.  
 thermochemistry of nickel and (THOMSEN), 1877, i., 574.  
 colour coefficient of (BAYLEY), 1881, T., 363.  
 copper, nickel, iron, manganese, and chromium, colour-properties and relations of (BAYLEY), 1880, T., 828.  
 nickel, and copper, colour relations of (BOTTOMLEY), 1882, A., 1.  
 action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 84.  
 action of zinc on solutions of (LECOQ DE BOISBAUDRAN), 1876, ii., 551.  
 combining of carbon with (GARD), 1878, A., 376.  
 manufacture of large castings of nickel and (ANON.), 1877, i., 238.  
 amalgamation of (CASAMAJOR), 1878, A., 474.  
 metallurgy of (DIXON), 1879, A., 285.  
**Cobalt alloy** with mercury (MOISSAN), 1879, A., 693.

**Cobalt compounds**, spectra of (HORNER), 1873, 1161; (VOGEL), 1879, A., 189; (RUSSELL), 1881, A., 486, 957; 1882, A., 131.  
**Cobaltammonium compounds** (KLEIN), 1873, 585; (GIBBS), 1874, 340; 1875, 534; (JÖRGENSEN), 1877, ii., 571; 1879, A., 119, 597; (MERRICK), 1877, ii., 709, 846; (VORTMANN), 1877, ii., 845; 1879, A., 438; (PORUMBARU), 1881, A., 1106.  
**Cobalt bromides and iodides** (HARTLEY), 1874, 501.  
   chloride, compounds of, with aniline (LIPPMANN and VORTMANN), 1878, A., 787; 1879, A., 461.  
   iodate (CLARKE), 1878, A., 377.  
   potassium nitrite, estimation of cobalt in (BRAUNER), 1877, ii., 511.  
   oxides (BAYLEY), 1879, A., 507; (MOISSAN), 1881, A., 74.  
   preparation of (WRIGHT and LUFF), 1878, T., 533.  
   action of carbonic oxide, carbon and hydrogen on (WRIGHT and LUFF), 1878, T., 535.  
   sesquioxide, rehydration of (CROSS), 1879, T., 796.  
   hypophosphite (RAMMELSBERG), 1873, 10.  
   silicofluoride (ŠROLBA), 1877, i., 690.  
   sulphates, specific gravities of (THORPE and WATTS), 1880, T., 112.  
   chemical equivalence of nickel sulphate and (MILLS and SMITH), 1879, A., 876.  
   magnesium sulphate (NIES), 1873, 1114.  
   potassium sulphide (SCHNEIDER), 1875, 43.  
**Cobalt organic compounds**:—  
   gold cyanides (LINDBOM), 1878, A., 131.  
   potassium cyanide (DESCAMPS), 1879, A., 303.  
   thallium cyanide (FRONMÜLLER), 1878, A., 395.  
   yttrium cyanide (CLEVE and HÖGLUND), 1873, 138.  
   mercaptide (CLAËSSON), 1877, ii., 295.  
**Cobalt, detection, estimation and separation**:—  
   use of bromine in the analysis of nickel and (LANGBEIN), 1882, A., 99.  
   detection of (DONATH and MAYRHOFER), 1882, A., 555.  
   detection of nickel and, in presence of each other (PAPASOGLI), 1880, A., 286.

**Cobalt, estimation and separation:—**

- estimation of (GIBBS), 1874, 92;  
(ANON.), 1877, ii., 925; (DONATH),  
1880, A., 287; (ROESSLER), 1880,  
A., 347; (OHL), 1880, A., 583;  
(FRESSENIUS and BERGMANN), 1880,  
A., 751; (CLASSEN and V. REIS),  
1881, A., 1081.  
estimation of, by precipitation as  
oxalates (CLASSEN), 1877, ii., 924;  
1879, A., 1054.  
estimation of, in cobalt potassium  
nitrite (BRAUNER), 1877, ii., 511.  
separation of arsenic from nickel and  
(WÖHLER), 1877, ii., 573.  
separation of, from iron (MOORE),  
1881, A., 1171.  
separation of ferric oxide and alumina  
from (CLASSEN), 1879, A., 970.  
nickel, zinc, and manganese, separation  
of iron from (CLASSEN), 1877, ii.,  
924.  
separation of, from iron and nickel  
(ZIMMERMANN), 1880, A., 189.  
separation of, from nickel (GUYARD),  
1876, ii., 550; (PHIPSON), 1877,  
ii., 597, 925; (DIRVELL), 1880, A.,  
287; (REICHEL), 1881, A., 194;  
(DELVAUX), 1881, A., 1082;  
(JORISSEN), 1882, A., 1234.  
separation of, from zinc (FRESSENIUS),  
1873, 1261; 1874, 1180.  
**Cobaltamine compounds.** See Cobalt-  
ammonium compounds under Cobalt.  
**Cobaltite** (*cobalt-glance*) (GROTH), 1880,  
A., 13.  
**Cobaltocyanic acid** and its compounds  
(DESCAMPS), 1882, A., 154.  
**Cobalt-spar** (WINKLER), 1878, A., 17.  
**Cobalt speiss** (*speiskobalt*) (GROTH),  
1880, A., 13.  
composition of (RAMMELSBERG), 1877,  
ii., 176.  
twin-formation of (VOM RATH), 1878,  
A., 117.  
**Cobra poison** (PEDLER; BLYTH; BRUN-  
TON and FAYRER), 1880, A., 490.  
**Cobra de Capello**, poison of the (BLYTH),  
1877, ii., 206.  
**Cobric acid** (BLYTH), 1880, A., 491.  
**Cocaine.** See under Alkaloids.  
**Cocculin** (SCHMIDT and LÖWENHARDT),  
1881, A., 741.  
*Cocculus indicus*, constituents of the  
seeds of (SCHMIDT and LÖWEN-  
HARDT), 1881, A., 740.  
**Coccus red** (ROTHER), 1881, A., 130.  
**Cochineal**, adulteration of, by zinc  
sulphate (DURRWELL), 1876, i., 988.  
nature of the black spots produced in  
dyeing with (REIMANN), 1873, 657.

- Cochineal**, red, for woollen goods (KIEL-  
MEYER), 1877, ii., 380.  
detection of, in wine (GAUTIER), 1876,  
ii., 330, 428; 1877, ii., 935.  
*Cochlearia officinalis*, synthesis of the  
oil of (V. HOFMANN), 1874, 792.  
**Cockchafers**, constituents of the ashes  
of (FARSKÝ), 1882, A., 1223.  
feeding of pigs with (ANON.), 1874,  
384.  
**Cock's-foot grass** (*Dactylis glomerata*),  
cultivation of, in Saxony (NOBBE),  
1882, A., 422.  
**Cocoa** (*cacao*) (HELSCH), 1877, ii., 212;  
(TROJANOWSKY), 1877, ii., 363.  
nitrogenous constituents of (WIGNER),  
1879, A., 493.  
estimation of theobromine in (WOL-  
FRAM), 1879, A., 406.  
**Cocoa-butter** (*cacao-fat*; *oleum theo-  
bromæ*) (TROJANOWSKY), 1877, ii.,  
363.  
chemistry of, and fatty acids from  
(KINGZETT), 1878, T., 38.  
detection of adulterations in (RAM-  
SPERGER), 1877, ii., 931.  
**Cocoa-nut.** See under Agricultural  
Chemistry.  
**Cocoa-nut oil**, purification of (HIRSCH-  
BERG), 1876, i., 824.  
**Cod-liver oil.** See under Oils, animal.  
**Codeine** and its derivatives. See under  
Alkaloids.  
**Codethyline** (*ethylmorphine*) and its  
derivatives (GRIMAUX), 1881, A.,  
829; 1882, A., 218.  
**Codomethyline.** See Codeine under  
Alkaloids.  
**Cœlestine.** See Celestite.  
**Cœrulein** (v. BUCHKA), 1882, A., 58, 61.  
from wormwood oil (WRIGHT), 1874,  
1, 317.  
and gallein, preparation of, and  
printing and dyeing with (DURANT),  
1878, A., 924.  
dye-stuff from (PRUD'HOMME), 1882,  
A., 126.  
**Cœrulignone** (*cœdrivet*) (LIEBERMANN),  
1873, 70; 1874, 76; (v. HOF-  
MANN), 1874, 474; 1878, A., 417.  
action of strong sulphuric acid on  
(FISCHER), 1875, 1021.  
use of, in calico printing (v. MARX),  
1874, 1028.  
derivatives (LIEBERMANN), 1873,  
1033; (EWALD), 1879, A., 253.  
of the ethyl series. See Ethylcœrn-  
lignone.  
**Cœrulin** (v. BUCHKA), 1882, A., 60.  
**Coffee**, "Mogdad" (MOELLER), 1880,  
A., 936; 1881, A., 483.



- Coffee**, products obtained by the roasting of (BERNHEIMER), 1881, A., 287; 1882, A., 230.  
 influence of, on the excretion of urea (ROUX), 1873, 1152; (RABUTEAU), 1873, 1248.  
 method of distinguishing pure ground, from coffee substitutes (MÜLLER), 1873, 1065.  
 adulteration of (FRANZ), 1875, 388.  
 estimation of some of the chief adulterations of ground (KRAUCH), 1878, A., 449.  
 examination of (WITTSTEIN), 1875, 1294; (HILGER), 1877, ii., 232; (HUSON), 1879, A., 558; (ALLEN), 1880, A., 353; (RIMMINGTON), 1881, A., 473, 1177.  
 detection and estimation of chicory in (LEEBODY), 1875, 288; (ALLEN), 1875, 785; (FRANZ), 1877, i., 752; (PRUNIER), 1880, A., 514.  
**Coffees**, composition of (LEVESIC), 1877, i., 752.  
**Coffee extract**, Nienhaus's (WARTHA), 1874, 300.  
**Coffee oil** (ÜECH), 1881, A., 100.  
**Coffee plant**, saccharine matters in the fruit of (BOUSSINGAULT), 1881, A., 127.  
 constituents of the ash of various parts of the (LUDWIG), 1873, 525.  
**Cohesion**, nature of, and its chemical significance (MOHR), 1879, A., 579.  
 and vapour-density (MOUTIER), 1875, 1154.  
 (*synaphy*) of compound ethers, etc. (SCHOLZ), 1873, 587.  
**Coinage**, preparation of standard trial plates for verifying the composition of the (ROBERTS-AUSTEN), 1874, 97.  
 copper-nickel, facts relating to the history of (FLIGHT), 1882, T., 134.  
**Coins of ancient India**, composition of (FLIGHT), 1882, T., 138.  
**Coke**, pure, composition of (STAVELEY), 1881, A., 857.  
 removal of sulphur from (ANON.), 1873, 1270.  
 estimation of ash in (WAGNER), 1881, A., 196.  
 estimation of sulphur in (ESCHKA), 1874, 1007; (STOCK), 1875, 383; (BRADBURY), 1878, A., 1005; (ROLLET), 1879, A., 974; (DROWN), 1881, A., 645.  
 See also Coal.  
**Colchicine**, and "colchicoresin," and the  $\beta$ -compound (HERTEL), 1882, A., 74.  
**Colchicine**. See under Alkaloids.  
**Colchicum seed**, constituents of (ROSENWASSER), 1878, A., 327.  
**Cold**, industrial production of, by the expansion of permanent gases (ARMENGAUD), 1873, 716.  
 effects of exposure to (DRAPER), 1873, 287.  
**Colein**, from *Coleus Verschaffeltii* (CHURCH), 1877, i., 253.  
**Collagen**, chemical structure of (HOFMEISTER), 1881, A., 294.  
**Collidine**. See Methylthylpyridine and Trimethylpyridine.  
**Collieries**, fire-damp in (WINKLER), 1879, A., 760.  
 volatile products from burning (MAYENCON), 1878, A., 380.  
 detection of marsh-gas in (MALLARD and LE CHATELIER), 1879, A., 673.  
 estimation of marsh-gas in (COQUILLION), 1876, ii. 428; 1877, ii., 806; 1878, A., 843.  
**Colliery explosions** (FAYE), 1876, i., 981; (ABEL), 1881, A., 948.  
 due to carbonic anhydride (DELESSE), 1880, A., 220.  
 influence of coal-dust in (SIMONIN), 1879, A., 98; (GALLOWAY), 1880, A., 439; 1881, A., 950.  
**Collodion** of extraordinary tenacity (BÖTTGER), 1873, 658.  
 emulsion. See Photochemistry.  
 layers, physical properties of (GRIPON), 1875, 726.  
 preparations (MITCHELL), 1873, 540.  
**Colloid degeneration** (GAUTIER, CAZENÈVE and DAREMBERG), 1875, 658.  
**Colloids**, nitrogenised, synthesis of (GRIMAU), 1882, A., 415.  
**Colloturine** (HESSE), 1879, A., 73.  
**Colophalumina** and **colophthalene** (CURIE), 1875, 255.  
**Colophene**. See under Terpenes.  
**Colophonine** (*colophonine hydrate*) (MORRIS), 1882, T., 169.  
**Colophony**. See Resins.  
**Coloradoite**, a new mineral (GENTH), 1878, A., 383.  
**Colorimetric experiments** (BOTTOMLEY), 1879, A., 77; (BAYLEY), 1880, T., 418, 828; 1881, T., 362.  
**Colour**, change in, during winter, of certain Cupressineæ (M'NAB), 1874, 493.  
 in paper, estimation of (WURSTER), 1878, A., 823.  
**Colour-coefficients** (BAYLEY), 1880, T., 829; 1881, T., 363.

## COLOURING MATTERS—

**Colouring matters** (CROISSANT and BRETONNIÈRE), 1874, 932; (OTT), 1875, 300; (ANON.), 1876, i., 458; 1879, A., 571; 1881, A., 483; 1882, A., 441; (LAUTH), 1876, ii., 520; (v. HOFMANN), 1878, A., 78; (WITT), 1879, T., 356; (GREIFF), 1880, A., 41; (FISCHER), 1880, A., 474; (v. MILLER), 1880, A., 559, 640; (VIGNON and BOASSON), 1880, A., 717; (MELDOLA), 1882, A., 503; (KOECHLIN and WITT), 1882, A., 675; (FISCHER and RUDOLPH), 1882, A., 1066; (v. HOERMANN), 1882, A., 1067.  
 indestructible (ANON.), 1873, 959.  
 structure and formation of (WITT), 1876, ii., 403.  
 application of alcoholic chlorides in the manufacture of (MONNER and REVERBIN), 1878, A., 283.  
 use of methylic alcohol in preparing (ANON.), 1881, A., 211.  
 methods of estimating methylic alcohol in the manufacture of (KRAENER and GRODZKI), 1877, ii., 229.  
 spectra of (v. LEPEL), 1878, A., 925; (LANDAUER), 1879, A., 101; 1881, A., 591.  
 emission of (MILLS and CAMPBELL), 1879, T., 290.  
 action of infusorial earth on (ENGEL), 1880, A., 427.  
 (black), for woollen and semi-woollen goods (ANON.), 1873, 208.  
 (blue), for silk, use of molybdic acid for (ANON.), 1873, 306.  
 (blue-violet) (BRUNNER and BRANDENBURG), 1878, A., 314.  
 (lilac), for cotton (SAUVAGE), 1874, 1027.  
 (red), for ivory, gelatin, feathers, etc. (PUSCHER), 1873, 423.  
 (violet), poisonous (GINTL), 1875, 1304.  
   for wool (ANON.), 1873, 208.  
 organic, action of some reagents on (Scurati-Manzoni), 1877, i., 310.  
 uses of patent (GLANZMANN), 1877, i., 115.  
 process for precipitating potash in the form of alum from, intended for roller printing (SCHLUMBERGER), 1873, 950.  
 valuation of body (REIMANN), 1879, A., 179.

## COLOURING MATTERS—

**Colouring matters** of dyed stuffs, sodium hyposulphite ( $\text{SO}_2\text{Na}_2$ ) as a reagent in the analysis of the (Scurati-Manzoni), 1877, i., 349.  
 testing of, for adulteration (STEIN), 1874, 399; (FOL), 1875, 193.  
 estimation of, in textile fabrics (GABBA), 1873, 654; (RÉMONT), 1881, A., 1178.  
**Animal colouring matters:**—  
 of birds' egg-shells (LIEBERMANN), 1878, A., 590.  
 of cochineal (REIMANN), 1873, 657; (GAUTHIER), 1876, ii., 330, 425; 1877, ii., 935; (DURRWELL), 1876, i., 988; (KIELMEYER), 1877, ii., 380.  
 of feathers (PUSCHER), 1873, 423.  
 of feathers and hair (HODGKINSON and SORBY), 1877, i., 427.  
 of *Monas prodigiosa* (HELM), 1876, i., 737.  
 from *Purpura lapillus* (SCHUNCK), 1879, T., 594; 1880, T., 613.  
 of *Iveilla limbosa* (A. and G. DE NEGRI), 1877, ii., 791.  
**Coal tar and other artificially prepared colouring matters in general:**—  
 (scarlet), from "acid-yellow" (v. MILLER), 1880, A., 814.  
 from pseudacouine (WRIGHT and LUFF), 1878, T., 160.  
 from alizarin (VOGEL), 1879, A., 83.  
 absorption-spectrum of (ROSENSTIEHL), 1879, A., 807.  
 from *o*-amidophenol (FISCHER), 1879, A., 924.  
 from diamidotriphenylmethane (FISCHER), 1880, A., 662.  
 from the action of ammonia on glyoxylic acid (BÖTTINGER), 1880, A., 622.  
 from aniline (HAMEL), 1873, 640.  
 from the action of nitrous acid on the aromatic oxy-compounds (LIEBERMANN), 1875, 167.  
 (blue), from apomorphine and other morphine derivatives (MAYER and WRIGHT), 1873, 1083.  
 from azoanthrol (LIEBERMANN), 1882, A., 976.  
 from dibromanthraquinones (PERKIN), 1880, T., 554.  
 ( $\text{C}_{16}\text{H}_{20}\text{N}_2$ ) from chloranil and dimethylaniline (WICHELHAUS), 1882, A., 58.  
 from coal-tar (ANON.), 1880, A., 358, 595.

## COLOURING MATTERS—

**Coal tar and other artificially prepared colouring matters in general:—**

from coal-tar. identification of (SPILLER), 1881, A., 659.

from cerulein (PRUD'HOMME), 1882, A., 126.

from cresol (WICHELHAUS), 1874, 721; (ANNAHEIM), 1876, ii., 297.

(purple) from cyanogen (BONG), 1875, 565.

from diazo-compounds (WITT), 1879, T., 179.

from the action of diazo-compounds on such bodies as phlorizin (GRIESS), 1881, A., 429.

from dimethylaniline (FISCHER), 1878, A., 51; 1879, A., 53; 1880, A., 40, 636; 1881, A., 587; 1882, A., 392, 833; (ANON.), 1879, A., 571; (WICHELHAUS), 1882, A., 58.

(blue), from the action of *p*-toluene-sulphonic chloride on dimethylaniline (MICHLER and MEYER), 1880, A., 108.

from diphenylthiocarbazide (FISCHER), 1878, A., 308.

from gallacetophenone (RASIŃSKI), 1882, A., 1288.

from furfuraldehyde (SCHIFF), 1880, A., 391.

from the action of oxalic and sulphuric acids on *p*-hydroxybenzaldehyde (LIEBERMANN), 1878, A., 887.

from  $\beta$ -naphtholdisulphonic acids (GRIESS), 1881, A., 179.

preparation of, by the action of diazoanils on naphthols and naphtholsulphonic acids (ANON.), 1882, A., 124.

(blue), from  $\beta$ -naphtholtetrazobenzene (NIETZKI), 1881, A., 178.

from phenols (LIEBERMANN), 1874, 1096; (REICHL), 1877, i., 310; 1880, A., 426; (MELDOLA), 1880, A., 881; 1881, T., 37.

from phenol, rosolic acid, aurin, corallin and azulin (ERHART), 1878, A., 315.

from the action of benzotrichloride on phenols and tertiary aromatic bases (DOEBNER), 1878, A., 873; 1880, A., 239, 644; 1881, A., 165; 1882, A., 956.

from the action of diazo-compounds on phenols (STEBBINS), 1880, A., 880.

## COLOURING MATTERS—

**Coal tar and other artificially prepared colouring matters in general:—**

from the action of aromatic nitro-substitution-products on phenols and polyatomic alcohols (BRUNNER), 1882, A., 784.

from the oxidation of *p*-phenylenedi- and -tetra-methyldiamine (WURSTER), 1880, A., 111.

containing sulphur from *p*-phenylenedimethyldiamine (KOCH), 1879, A., 628; 1880, A., 110.

from the action of sodium nitrite on *p*-phenylenetetramethyldiamine (WURSTER and SCHOBIG), 1880, A., 111.

from pyrogallie ethers (v. HOFMANN), 1878, A., 871.

in commercial purpurin (SCHUNCK and ROEMER), 1877, i., 666.

from the methylated derivatives of toluidine (MONNET, REVERDIN and NÖLTING), 1879, A., 310.

of viridic acid (ČECH), 1877, i., 478.

**Vegetable colouring matters:—**

from anacardium nuts (BÖTTGER), 1873, 205.

from Beth-a-barra wood (SADTLER and ROWLAND), 1881, A., 1042.

of bilberries (ANDRÉE), 1880, A., 927.

of *Boletus luridus* (CUGINI), 1877, ii., 791.

of caliatour wood (FRANCHIMONT and SICHERER), 1879, A., 470.

from capers (FÖRSTER), 1882, A., 976.

of the Caryophyllaceæ (HILGER and BISCHOFF), 1879, A., 730; 1880, A., 413.

of chlorophyll. See Chlorophyll under Agricultural Chemistry.

(red), accompanying chlorophyll (BOUGAREL), 1877, ii., 790.

of colocyath and of *Cucumis Anguria* (A. and G. DE NEGRI), 1880, A., 267.

in flour paste (LECOQ DE BOISBAUDRAN), 1882, A., 739.

of grapes (ANDRÉE), 1880, A., 927.

(yellow), from indigo (GIRAUD), 1879, A., 936.

decoloration of indigo-solution and other vegetable, by various sulphur-compounds (SCHÄR), 1876, ii., 103.

(red), of the *Lithospermum erythrorhizon* (KUHARA), 1879, T., 22.

## COLOURING MATTERS—

**Vegetable colouring matters:—**

- of madder (ROSENSTIEHL), 1875, 197, 387.
- of the Musacæ (NIEDERSTADT), 1876, ii., 206.
- of *Neottia Nidus-aris* (PRILLIEUX), 1874, 911.
- of *Palmella cruenta* (PHIPSON), 1879, A., 1042; 1880, A., 325.
- of plants (SORBY), 1874, 279; (SAVIGNY and COLLINEAU), 1882, A., 309.
- action of ozone on the (LEEDS), 1880, A., 58.
- of the petals of *Rosa gallica* (SENIER), 1877, ii., 502.
- of *Rubus Chamæmorus* (CECH), 1881, A., 129.
- from rue (FÖRSTER), 1882, A., 976.
- of sandal woods (FRANCHIMONT and SICHKER), 1879, A., 470.
- from Chinese yellow-berries (FÖRSTER), 1882, A., 976.

**Wine colouring matters:—**

- natural, of wines (GRASSI), 1874, 716; 1875, 484; (DUCLAUX), 1874, 725; (DUPRÉ), 1877, i., 234; ii., 227; (GRIESSMAYER), 1877, ii., 368; (REICHARDT; CALMBERG), 1878, A., 93; (GAUTIER), 1878, A., 987; (ERDMANN), 1879, A., 171.
- artificial, of wines (MELLIAS), 1876, i., 117, (VOGEL), 1876, i., 740; (GAUTIER), 1876, ii., 330, 428; 1877, ii., 368, 935; 1878, A., 904; (JACQUEMIN), 1876, ii., 446, 667; (HUSSON), 1876, ii., 667; (LAMATTINA), 1876, ii., 668; (BOUILLON), 1877, i., 234; (DUPRÉ), 1877, i., 224; 1877, ii., 227; 1880, T., 572; (FORDOS), 1877, i., 750; (HILGER), 1877, i., 751; ii., 938; (GRIESSMAYER), 1877, ii., 368; (CHANCEL), 1877, ii., 371; (COTTON), 1877, ii., 521; (LIEBERMANN), 1877, ii., 939; (V. LEPEL), 1878, A., 168; 1880, A., 191; (NESSLER), 1880, A., 191; (WARTHA), 1880, A., 680; (ANDRÉE), 1880, A., 927; (KÖNIG), 1881, A., 314; (MACAGNO), 1881, A., 659, 852; (ANON.), 1882, A., 557; (HAAS), 1882, A., 1006; (PASTROVICH), 1882, A., 1138.

## COLOURING MATTERS:—

- Aldehyde-green** (SPRINGMÜHL), 1874, 611; (VOGEL), 1879, A., 84.
- Alizarin colouring matters.** See Alizarin and Anthraquinone.

## COLOURING MATTERS—

- Alkali-blue** (ANON.), 1879, A., 418.
- Alkali-green** (MELDOLA), 1882, T., 189; A., 503.
- Alkannin** (CARNELUTTI and NASINI), 1881, A., 53.
- Alnein** (SAVIGNY and COLLINEAU), 1882, A., 309.
- Aniline-black** (LAUTH; BRANDT), 1873, 1069; (ROSENSTIEHL; KIELMEYER), 1876, i., 816; (NIETZKI), 1876, ii., 310; 1877, i., 91; 1878, A., 791; (GRAWITZ), 1878, A., 824; (ANON.), 1882, A., 1150.
- formation of (MEYER), 1876, i., 936; (ROSENSTIEHL), 1876, ii., 311.
- formation of, by chlorates (GLENCK), 1881, A., 1186.
- formation of, by chromate in presence of chlorates (GRAWITZ), 1879, A., 495.
- formation of, by ferro- and ferricyanide of aniline (KIELMEYER), 1875, 1062; (WEHRLIN; SCHLUMBERGER), 1875, 1063.
- formation of, by means of metallic salts (KRUIS), 1874, 1120.
- inactivity of chromium-compounds in producing, as compared with the action of vanadium compounds (WITZ), 1879, A., 421.
- formation of, by means of vanadium salts (GUYARD), 1876, i., 814; (WITZ), 1876, ii., 678; 1877, ii., 950; (GOUILLOX), 1878, A., 454.
- synthesis of, by electrolysis (COQUILLON), 1876, i., 266, 817; (GOPPELSROEDER), 1876, i., 815.
- composition of (GOPPELSROEDER), 1876, ii., 639.
- effect of permanganic acid on (WITZ), 1875, 1064.
- green tint assumed by (BRANDT), 1875, 1064.
- method of preventing, from turning green (WITZ), 1877, ii., 950.
- metamorphoses of (GOPPELSROEDER), 1877, ii., 606, 763.
- combinations of, with other colours on cotton (KIELMEYER), 1876, i., 816.
- dyeing with (WITZ), 1879, A., 684.
- dyeing with, by means of vanadium salts (HOMMEY), 1878, A., 356.
- improvements in dyeing and printing with (HOLLIDAY; GRAWITZ), 1879, A., 422.
- dyeing of wool with (ANON.), 1874, 399.
- resists for (ANON.), 1882, A., 126.



## COLOURING MATTERS—

- Aniline-black** vat (GOPPELSROEDER), 1877, ii., 606, 763.
- Aniline blacks** (WOLFF), 1880, A., 76.
- Aniline-blue** (ANON.), 1879, A., 415.  
two distinct kinds of (MELDOLA), 1882, T., 197.  
impurities and adulterations of (SPRINGMÜHL), 1874, 834.
- Aniline-brown** obtained by the action of nitric acid on  $\alpha$ -phenylenediamine (LAUTH), 1876, ii., 520.
- Aniline-colours**, green (VOGEL), 1879, A., 83.  
appearances exhibited in the diffusion of, on the surface of water (v. OBERMAYER), 1874, 865, 1044.  
dissolved in collodion, use of (SPRINGMÜHL), 1873, 207.  
influence of nitrogen in textile fabrics, on the direct fixing of (JACQUEMIN), 1874, 1026.  
fixation of, by means of size containing tannin (ANON.), 1873, 1276.  
poison-contents of (SPRINGMÜHL), 1873, 207.  
process for rendering innocuous the arsenical residues of the manufacture of (WINKLER), 1877, ii., 377.  
on cotton, cheap printing colour for (ANON.), 1873, 308.  
dyeing felt with (ANON.), 1873, 1176.  
behaviour of infusorial earth (*kieselguhr*) to (BÖTTGER), 1875, 170.  
detection of, in red wine (MACAGNO), 1881, A., 659, 852.  
estimation of, by means of sodium hyposulphite (STAMM), 1873, 1263.
- Aniline-green**, impurities and adulterations of (SPRINGMÜHL), 1874, 611, 720.  
dyeing of straw with (HARTMANN), 1873, 305.  
dyeing of wool with (LAUTH), 1873, 959.
- Aniline-grey**, production of, on cotton fabrics in printing (LAUBER), 1874, 932.
- Aniline-pink**. See Safranine.
- Aniline-red**. See Magenta.
- Aniline-violet**. See Methyl-violet.
- Aniline-yellow** and -orange, impurities and adulterations of (SPRINGMÜHL), 1874, 835.
- Anisole-red**, preparation of (ANON.), 1882, A., 125.

## COLOURING MATTERS—

- Anthracene-blue**. See Alizarin-blue under Alizarin.
- Aurantia** (GNEHM), 1877, i., 310; (LEHNE), 1881, A., 41.
- Aurin**. See Rosolic acid.
- Azo-colours** (WITT), 1879, T., 189; (ANON.), 1880, A., 359; 1882, A., 443; (STEBBINS), 1880, A., 715; (WALLACH), 1882, A., 603; (LIEBERMANN), 1882, A., 976.  
related to chrysoidine, absorption spectra of (LANDAUER), 1881, A., 591.
- Azophenine** (KIMICH), 1876, i., 268; (WITT), 1878, A., 54.
- Benzaldehyde-green**. See Malachite-green.
- Benzaurin** (DOEBNER), 1880, A., 239.
- Biebrich scarlet** (v. MILLER), 1880, A., 559, 813; (NIETZKI), 1880, A., 664; 1881, A., 178.
- Bixin**, its salts and chemical reactions (ERTI), 1874, 907; 1878, A., 739.
- Brazilein** (LIEBERMANN and BURG), 1877, ii., 194.  
and new compounds of (HUMMEL and PERKIN), 1882, T., 367, 373.  
composition of (BENEDIKT), 1876, i., 250.  
action of hydrobromic and of hydrochloric acids on (HUMMEL and PERKIN), 1882, T., 376.
- iso***Brazilein** bromhydrin, chlorhydrin, and acids sulphate (HUMMEL and PERKIN), 1882, T., 375.
- Cannell**, a brown aniline dye (KNOSP), 1874, 721.
- Chrome-black** on wool (REIMANN), 1879, A., 572.
- Chrome-green** (KOETHE), 1875, 673; (CASALI), 1875, 791.
- Chrysoidine** (*benzenazo-m-phenylenediamine*) (WITT), 1877, ii., 243, 457; 1879, T., 180; (v. HOFMANN), 1877, ii., 326; (NÖLTING and v. SALIS), 1881, A., 725.  
absorption spectrum of (LANDAUER), 1881, A., 591.  
an antiphotogenic colour (BARDY), 1878, A., 613.
- Chrysolin** from resorcinol (REVERDIN), 1877, ii., 889.
- Coccus red** (ROTHER), 1881, A., 130.
- Cerulein** (v. BUCHKA), 1882, A., 58, 61.  
from wormwood oil (WRIGHT), 1874, i., 317.  
and gallein, preparation of, and printing and dyeing with (DURANT), 1878, A., 924.

## COLOURING MATTERS—

**Cœrulein**, dye-stuff from (PRUD'HOMME), 1882, A., 126.

**Colein** from *Coleus Verschaffeltii* (CHURCH), 1877, i., 253.

**Corallin**. See Rosolic acid.

**Cotton Blue** (ANON.), 1879, A., 419.

**Curcumin** (GAJEWSKY), 1873, 504, 760; (JACKSON), 1881, A., 610.

its derivatives and oxidation (JACKSON and MENKE), 1882, A., 1107.

**Cyanine** (*quinoline-blue*), decomposition of an acid solution of, by silk (MERZ and WEITH), 1874, 334.

**Eosin** (v. HOFMANN), 1875, 571; (BINDSCHEDLER and BUSCH), 1876, ii., 84; 1879, A., 292; (v. BAEYER), 1877, i., 200; (DURAND), 1878, A., 455.

photographic action of (WATERHOUSE), 1876, ii., 232.

detection of, in dyed fabrics (WAGNER), 1876, ii., 328.

use of precipitated sulphur in dyeing wool with (REIMANN), 1878, A., 356, 824.

**Erythrin** (v. BAEYER), 1877, i., 202.

**Ericin** (SAVIGNY and COLLINEAU), 1882, A., 309.

**Ethylmauveine** (PERKIN), 1879, T., 721.

**Eupittonic acid** (*eupittone*; *pittacal*) (LIEBERMANN), 1876, ii., 101; 1878, A., 799; (v. HOFMANN), 1878, A., 871; 1880, A., 164, 249; (GRÄTZEL), 1879, A., 253.

**Extract-red**, reaction for distinguishing alizarin from (WAGNER), 1876, ii., 328.

**Flavaniline** and its derivatives (FISCHER and RUDOLPH), 1882, A., 1066.

**Flavopurpurin** (1:2:3'-*trihydroxy-anthraquinone*) (SCHUNCK and ROEMER), 1876, ii., 299; 1878, A., 985; (v. PERGER), 1879, A., 255; (ROSENSTIEHL), 1879, A., 384.

anthrapurpurin and isopurpurin, actual relations of (MORTON), 1879, A., 943.

detection of (SCHUNCK and ROEMER), 1880, A., 424.

*tribromo-* (SCHUNCK and ROEMER), 1878, A., 322.

**Fuchsine**. See Magenta.

**Gallein**, and its derivatives based on triphenylmethane, and phenylanthracene (v. BUCHKA), 1882, A., 58.

## COLOURING MATTERS—

**Gallein**, manufacture of (DE MONT-LAUR), 1882, A., 126.

and cœrulein, preparation of, and printing and dyeing with (DURAND), 1878, A., 924.

*di bromo-* (v. BUCHKA), 1882, A., 61.

**Gentian-violet** (ANON.), 1876, ii., 236.

**Grenade** (REIMANN), 1873, 208.

**Hæmatein** (HALBERSTADT and v. REIS), 1881, A., 611.

and its reactions (HUMMEL and PERKIN), 1882, T., 367.

composition of (BENEDIKT), 1876, i., 250.

*iso***Hæmatein**, and its derivatives (HUMMEL and PERKIN), 1882, T., 369.

**Helianthin** (*methyl-orange*) (GRIESS), 1877, ii., 456; (WILLIAMS), 1879, A., 553.

**Hofmann's violet** (MONNET and REVERDIN), 1878, A., 283.

**Indigo dyes**. See under Indigo.

**Indophenols** (KOECHLIN and WITT), 1882, A., 675.

**Induline** (WITT), 1879, T., 188.

manufacture of (WOLFF), 1880, A., 77.

**Iodine-green** (ANON.), 1873, 422; (SPRINGMÜHL), 1874, 611;

(VOGEL), 1879, A., 84.

See also Aniline-green and Methyl-green.

**Kino**, Malabar (ETTI), 1879, A., 159.

**Kino-red** (ETTI), 1879, A., 159.

**Lac**, black, for metal and wood (ANON.), 1879, A., 684.

**Lightfoot-black**, transferring, from one fibre to another (WOLFF), 1880, A., 75.

**Lutein** (MALY), 1882, A., 76.

**Maclurin** (BENEDIKT), 1877, ii., 496. morin and moritannic acid (LOEWE), 1876, i., 395.

**Madder colours** (ROSENSTIEHL), 1875, 197, 387; (SCHUNCK and ROEMER), 1877, i., 665; 1878, T., 422; (PLATH), 1877, ii., 496; (ANON.), 1878, A., 737.

part played by acids in dyeing with, and their artificial substitutes (ROSENSTIEHL), 1876, i., 818.

method of softening water used for dyeing with (ROSENSTIEHL), 1876, ii., 677.

**Madder-red** transformed into madder-orange (STROBEL), 1876, ii., 233.

**Magdala-red**, spectra of (VOGEL), 1878, A., 545.

## COLOURING MATTERS—

- Magdala-red**, colouring matter analogous to (LECCO), 1875, 169.
- Magenta** (*fuchsine*) (FERRIERE), 1873, 1272; (BRUNNER and BRANDENBURG), 1878, A., 314.  
preparation of (WURTZ), 1877, i., 322.  
preparation of, without arsenic (ANON.), 1873, 422; (BRÜNING), 1874, 98.  
utilisation of the residues obtained in the manufacture of (ANON.), 1879, A., 995.  
colour-dispersion of (CHRISTIANSEN), 1873, 236.  
for cotton (ANON.), 1873, 208.  
behaviour of wool towards an ammoniacal solution of (BÖTTGER), 1878, A., 184.  
wines coloured by (COTTON), 1877, ii., 521.  
disappearing from coloured wines, possibility of (NESSLER), 1882, A., 347.  
action of, introduced into the stomach and the blood (FELTZ and RITTER), 1877, i., 487.  
and other colouring matters, detection of (BÉCHAMP), 1877, i., 749.  
detection of, in wines (JACQUEMIN), 1876, ii., 446, 667; (BOUILLHON), 1877, i., 234; (FORDOS), 1877, i., 750; (GAUTIER), 1877, ii., 936; (LIEBERMANN), 1877, ii., 939; (HAAS), 1882, A., 1006.  
detection and estimation of, in wines which have been artificially coloured with (HUSSON), 1876, ii., 667.  
diamond (GINTL), 1873, 208.
- Malachite-green** (*benzalddehyde-green*) and its derivatives (DOEBNER), 1878, A., 873; 1879, A., 312, 787; 1880, A., 239; 1881, A., 165; (VOGEL), 1879, A., 84; (ANON.), 1879, A., 144; (FISCHER), 1879, A., 236, 787; 1880, A., 40; 1881, A., 589; (BINDSCHEDLER and BUSCH), 1879, A., 571.  
constitution of (ROSENSTIEHL), 1880, A., 555.
- Mauveine**, and allied colouring matters, and its reactions and salts (PERKIN), 1879, T., 717.  
absorption of, by siliceous substances generally (SKEY), 1874, 1028.
- ψ-Mauveine**, and its reactions and salts (PERKIN), 1879, T., 726.

## COLOURING MATTERS—

- Methylene-blue**, dyeing with (ANON.), 1879, A., 416; 1882, A., 127.
- Methylene-red** (KOCH), 1879, A., 628; 1880, A., 110.
- Methyl-green** (APPENZELLER), 1873, 1242; (ANON.), 1873, 1272.  
dyeing wool with (ANON.), 1876, i., 817.  
See also Aniline-green and Iodine-green.
- Methyl-orange**. See Helianthin.
- Methyl-violet** (BRUNNER and BRANDENBURG), 1878, A., 313.  
formation of (BRUNNER and BRANDENBURG), 1878, A., 667.  
method of preparing (HASSEN-CAMP), 1880, A., 75.  
direct formation of, in cotton fibres (DUPUY), 1876, i., 817.  
impurities and adulterations of (SPRINGMÜHL), 1874, 612.
- Murexide**, synthesis of (GRIMAU), 1875, 752; 1879, A., 376, 460.  
dyeing with (KOPP), 1873, 75.
- β-Naphthol-violet** (MELDOLA), 1881, T., 38.
- Nigrosin**, manufacture of (WOLFF), 1880, A., 78.
- Enocyanin** (*æolin*), preparation of (VARENNE), 1878, A., 438.  
estimation of, in wine (GRASSI), 1874, 716; 1875, 484; (JEAN), 1882, A., 430, 1137.
- Orcinaurin**, and its preparation (NENCKI), 1882, A., 1201.
- Orcinol colours** (LIEBERMANN), 1875, 168; (SCHWARZ), 1880, A., 551.
- Orleans-yellow** on cotton (KIELMEYER), 1876, i., 819.
- Palmellin** (PHIPSON), 1879, A., 1042; 1880, A., 325, 720.
- Phlorein**, composition of (BENEDIKT), 1874, 894; 1876, i., 250.
- Phenolglycerein** (REICHL), 1880, A., 426.
- Phyllocyanin**, oxidation and distillation of (SACHSSE), 1882, A., 69, 412.  
as a reagent (PELLAGRI), 1877, i., 109.
- Phylloxanthin** (GAUTIER), 1880, A., 266.
- Picric acid**. See Picric acid.
- Ponceau R. R.** (VIGNON and BOASSON), 1880, A., 717.
- Primerose** (DURAND), 1878, A., 455.
- Punicin** (*purple of the ancients*) (BIZIO), 1873, 657; (A. and G. DE NEGRI), 1876, ii., 533; (SCHUNCK), 1879, T., 595; 1880, T., 613.

## COLOURING MATTERS—

**Purpurin.** See Purpurin.

**Purpurogallin** (*pyrogalloquinone*) and its derivatives (WICKELHAUS), 1873, 172; (DE CLERMONT and CHATAUD), 1882, A., 839, 970, 1065.

**Quebracho** (ARNAUDON), 1877, ii., 951.

**Quinolglycerin** (REICHL), 1880, A., 426.

**Quinoline-blue.** See Cyanine under Colouring matters.

**Resaurin** (NENCKI and SIEBER), 1881, A., 812; (NENCKI), 1882, A., 1201.

**Resazurin** (*resazoin*, *diazoresorcinol*, *azoresorcinol*), and its ethyl ether (WESELSKY and BENEDIKT), 1881, A., 726.

*mono- and di-nitro-*, and the action of potassium hydroxide on (BENEDIKT and v. HÜEL), 1881, A., 1134.

**Resorcinol colouring matters** (v. WAGNER), 1876, ii., 82; (DURAND), 1878, A., 455; (BINDSCHEDLER), 1880, A., 426; (WESELSKY and BENEDIKT), 1881, A., 726; (DAMM and SCHREINER), 1882, A., 968.

**Resorcinol-black** (v. WAGNER), 1876, ii., 233.

**Resorcinol-blue** (BINDSCHEDLER and BUSCH), 1879, A., 292.

**Rosaniline colouring matters** (E. and O. FISCHER), 1876, ii., 529; 1878, A., 573, 791; 1879, A., 236, 384, 787; 1880, A., 390; 1881, A., 162. See also Magenta.

**Rouge français** (v. MILLER), 1880, A., 664.

**Rouge de Tournai**, dyeing of cotton with (ANON.), 1873, 423.

**Rubidine** (A. and G. DE NEGRI), 1880, A., 267.

**Rufigallol.** See Rufigallol.

**Safranine** (BÖTTGER), 1874, 722; (DALE and SCHORLEMMER), 1879, T., 682; (PERKIN), 1879, T., 728; (BINDSCHEDLER), 1880, A., 391.

constitution of (PHILLIPS), 1874, 81.

**Parasafranine** and its salts (PERKIN), 1879, T., 729.

**Safrosin**, manufacture of (BINDSCHEDLER and BUSCH), 1879, A., 292.

**Soluble Blue** (ANON.), 1879, A., 418.

**Tropæolines** (v. MILLER), 1878, A., 527; (WITT), 1879, T., 184; (LUNGE), 1879, A., 176.

## COLOURING MATTERS—

**Violet de Paris** (LAUTH), 1873, 910.

See also Methyl-violet.

**Viridine.** See Alkali-green.

**Xylindrin** (LIEBERMANN), 1875, 170.

**Zinalin** (MÜLLER-JACOBS), 1878, A., 140.

**Colouring matters.** See also Blood pigments, Dyeing, Indicators, Mordants, Pigments, Tannins and Urine pigments.

**Columbic acid** (ALESSANDRI), 1882, A., 1005.

**Columbin** (PATERNO and OGIALORO-TODARO), 1879, A., 730; (ALESSANDRI), 1882, A., 1004.

supposed identity of limonin and (PATERNO and OGIALORO-TODARO), 1879, A., 730.

**Columbite** (*niobite*) (VOM RATH), 1881, A., 550.

from Amelia Co., Virginia (DUNNINGTON), 1882, A., 1175.

from N. Carolina and Colorado (SMITH), 1877, ii., 576, 714.

from the Isergebirge (JANOVSKY), 1880, A., 369.

crystalline form of (SCHARIZER), 1881, A., 544.

*Coluted arborescens* (*bladler scenna*), gas from the pods of (BENDER), 1876, i., 955; (SAINTPIERRE and MAONIEN), 1877, i., 105.

**Colycynth**, colouring-matter of (A. and G. DE NEGRI), 1880, A., 267.

**Combination**, chemical. See Affinity.

**Combustion**, lecture experiments on (HEUMANN), 1873, 1186.

point of (MITSCHERLICH), 1877, i., 42.

temperature of (BERTHELOT), 1877, i., 680; 1878, A., 5.

influence of pressure on (CAILLETET), 1875, 1234; (WARTHA), 1876, ii., 376.

*in vacuo*, some trials of Frankland and Armstrong's process of (THUDICHUM and KINGZETT), 1876, ii., 363.

incomplete (MEYER), 1878, A., 262. luminous incomplete, of ether and other organic bodies (PERKIN), 1882, T., 363.

slow (VAN KERCKHOFF), 1873, 128.

**Comenamic acid.** See Dihydroxypyridine-2-carboxylic acid.

**Comenic acid**, and its derivatives (REIBSTEIN), 1882, A., 197; (OST), 1882, A., 601.

**Compost manure.** See Manure under Agricultural Chemistry.



**Compounds**, crystalline, formed in water containing hydrogen sulphide and mercaptan (BLAIRIE), 1882, A., 592.  
 molecular constitution of, dynamical evidence of the (MAXWELL), 1875, 493.  
 spectra of (MOSER), 1877, ii., 688.  
 in solution, specific rotatory power of (LANDOLT), 1876, ii., 371.  
 effect of light on (BLUNT), 1880, A., 521.  
 magnetic behaviour of (WIEDEMANN), 1878, A., 545.  
 heat of solution of slightly soluble (BERTHELOT), 1876, i., 512.  
 thermal coefficient of expansion of, influence of pressure and strain on (PUSCHL), 1876, ii., 41.  
 chemical stability of, in sonorous vibration (BERTHELOT), 1880, A., 437.  
 relation between the specific gravities and molecular weights of, when in the liquid state (THORPE), 1880, T., 141, 327.  
 boiling at high temperatures, method of determining vapour-density of (MEYER), 1877, i., 34.  
 solution of difficultly soluble (ALLEN), 1877, ii., 217.  
 influence of polymerisation on (LÖWENTHAL), 1878, A., 108.  
 dry, estimation of, by the use of alcohol (TSCHAPLOWITZ), 1880, A., 351.  
**Compounds, aromatic**, constitution of (FITTIG and MAGER), 1875, 147.  
 structural formulæ of (WROBLEWSKI), 1879, A., 526.  
 vapour pressures of (NAUMANN), 1878, A., 263.  
 action of bromine on (MERZ and GESSNER), 1876, ii., 511; (GESSNER), 1877, i., 300.  
 action of chlorine on (MERZ and RUOFF), 1876, ii., 511; 1877, i., 706; (RUOFF), 1877, i., 299.  
 action of hydrogen dioxide on (LEEDS), 1881, A., 719; 1882, A., 501.  
 brominated, action of sodium ethoxide on some (BALBIANO), 1882, A., 168.  
 hydrogenation of (BERTHELOT), 1879, A., 376.  
 reduction of, by phosphorus and hydriodic acid (GRAEBE), 1876, i., 70.  
 with long side-chains, action of iodine on (PREIS and RAYMAN), 1879, A., 623; 1880, A., 463.

**Compounds, aromatic**, with six atoms of carbon, isomerism among (KÖRNER), 1876, i., 204.  
 containingsilicon (LADENBURG), 1873, 1026; 1874, 803.  
 in the organism (BAUMANN), 1879, A., 816; 1880, A., 648; 1882, A., 514.  
 behaviour of some, in the animal body (v. NENCKI), 1875, 96; (PREUSSE), 1882, A., 756.  
**Compounds, binary**, formation and decomposition of, by the dark discharge (BERTHELOT), 1876, ii., 596.  
**Compounds, carbon**, in meteorites (SMITH), 1876, ii., 392, 615; 1877, i., 288.  
 new modes of preparing them (PFANKUCH), 1873, 362.  
 relations between the physical properties of, and their chemical constitution (BRÜHL), 1880, A., 293, 295, 685, 781; 1881, A., 15, 489.  
 influence of atomic arrangement on the physical properties of (CARNELLEY), 1882, A., 458.  
 liquid, relation between the optical and thermal properties of (BRÜHL), 1882, A., 263, 445; (THOMSEN), 1882, A., 567.  
 relation between constitution, refractive power and density of (BRÜHL), 1880, A., 295, 781; 1881, A., 489.  
 relation between the molecular structure of, and their absorption spectra (HARTLEY), 1881, T., 153; 1882, T., 45; (ABNEY and FESTING), 1881, A., 487, 957; 1882, A., 130.  
 relations between the formulæ of, and the rotatory power of their solutions (LE BEL), 1875, 874.  
 relation between constitution and molecular refraction of (SCHRÖDER), 1882, A., 351, 910, 1153.  
 influence of the structure of, on their refractive power (KANONNIKOFF), 1882, A., 349.  
 relation between constitution and physiological action of (SALKOWSKI), 1876, i., 949.  
 spectra of (HARTLEY and HUNTINGDON), 1880, A., 430; (WÜLLNER), 1882, A., 130.  
 with hydrogen and nitrogen, spectra of (LIVEING and DEWAR), 1881, A., 957; 1882, A., 252.  
 rotatory power of (THOMSEN), 1881, A., 215, 257, 709, 1020; (LANDOLT), 1881, A., 403, 795.  
 magnetic rotation of (PERKIN), 1882, T., 330.

**Compounds, carbon, in the gaseous state, refraction of** (MASCART), 1878, A., 359, 693.  
**liquid, molecular refraction of** (LANDOLT), 1882, A., 909.  
**table of the molecular refraction of** (BRÜHL), 1880, A., 781.  
**refraction of isomeric** (GLADSTONE), 1881, A., 213.  
**refraction equivalents of** (GLADSTONE), 1881, A., 333.  
**refractive power of** (JANOVSKY), 1881, A., 214.  
**phosphorescence of** (RADZISZEWSKI), 1877, ii., 345, 863; 1881, A., 488.  
**electrolysis of, in aqueous solutions** (HABERMANN), 1881, A., 215.  
**heat of combustion of** (v. RECHENBERG), 1881, A., 10, 135; (THOMSEN), 1881, A., 219.  
**heat of formation of** (BERTHELOT and OGIER), 1881, A., 870.  
**high-boiling, vapour-densities of certain** (TROOST), 1879, A., 1025.  
**expansion and molecular volumes of** (WIEBE), 1879, A., 1002; 1880, A., 88, 784.  
**solid, molecular volumes of** (SCHRÖDER), 1879, A., 610; 1880, A., 21, 694.  
**molecular weights of, relation of specific heat to** (v. REIS), 1881, A., 963.  
**atomic volume and specific gravity of** (HERMANN), 1876, ii., 496; 1878, A., 637, 697.  
**solid, specific gravity of** (HERMANN), 1876, ii., 496; 1879, A., 579; (SCHRÖDER), 1879, A., 610; 1880, A., 21, 694; 1881, A., 496, 969.  
**melting points of** (WOLFF), 1876, i., 334.  
**melting points of, new method of determining** (TERREIL), 1879, A., 673.  
**combustion of, in oxygen** (LOISEAU), 1876, ii., 659.  
**equivalents of** (BERTHELOT), 1877, ii., 862.  
**changes in the position of hydrogen-atoms on the carbon-skeleton of** (HEINTZ), 1873, 152.  
**union of, by pressure** (SPRING), 1881, A., 503; 1882, A., 273.  
**absorption of free nitrogen by** (BERTHELOT), 1876, ii., 392; 1877, ii., 862.  
**action of aluminium chloride and bromide on** (GUSTAVSON), 1877, ii., 599; 1878, A., 972; 1879, A., 142, 785; 1880, A., 370; 1881, A., 398.

**Compounds, carbon, action of antimony pentachloride on** (LÖSSNER), 1876, ii., 282.  
**action of boron fluoride on certain classes of** (LANDOLPH), 1877, ii., 863; 1878, A., 774; 1879, A., 914.  
**action of chromyl dichloride on** (ETARD), 1877, i., 584; 1879, A., 320; 1881, A., 581.  
**action of the copper-zinc couple on** (GLADSTONE and TRIBE), 1873, 445, 678, 961; 1874, 208, 406, 410, 615; 1875, 508; 1878, T., 306; 1879, T., 107.  
**action of heated lead oxide on** (BEHR and VAN DORP), 1873, 1135.  
**action of magnesium on some** (KERN), 1877, ii., 285.  
**action of nitrogen peroxide on** (LEEDS), 1881, A., 584.  
**action of nitrosyl chloride on** (TILDEN), 1875, 514.  
**action of silver hyponitrite on** (ZORN), 1879, A., 309.  
**chlorination and bromination of** (DAMOISEAU), 1876, ii., 617.  
**decomposition of, by zinc-dust** (JAHN), 1880, A., 794; 1881, A., 141.  
**oxidation of** (ERLENMEYER, SIGEL and BELL), 1874, 980; 1876, i., 893; (REICHARDT; ZEIDLER), 1876, i., 363.  
**oxidation of, in alkaline solution at the body temperature** (NENCKI and SIEBER), 1882, A., 1307.  
**metamerism in** (SCHREINER), 1881, A., 88.  
**action of certain kinds of filters on** (WANKLYN), 1876, ii., 554.  
**preservation of** (LAUJORROIS), 1873, 763.  
**new method of analysing** (FRERICHS), 1877, ii., 509.  
**use of platinum in the ultimate analysis of** (KOFFER), 1876, i., 660; 1877, i., 228.  
**analysis of a mixture of** (POPPER), 1877, ii., 929.  
**detection of sulphur in** (VOHL), 1876, ii., 552.  
**detection of nitrogen, sulphur, and chlorine in** (SPICA), 1880, A., 348.  
**estimation of the constituents of, by one combustion** (MITSCHERLICH), 1874, 93.  
**estimation of very small quantities of arsenic in** (CROMMYDIS), 1876, ii., 114.  
**estimation of phosphorus, arsenic, sulphur, chlorine, bromine, and iodine in** (BRÜGELMANN), 1877, i., 739.

- Compounds, carbon**, estimation of the halogens in (KLOBUKOWSKI), 1877, ii., 225.  
 estimation of chlorine, bromine and iodine in (KOPP), 1876, i., 961.  
 estimation of nitrogen in (MÄRCKER), 1873, 532; (DUPRE), 1876, ii., 115; (GRETE), 1879, A., 80; (GROVES), 1880, T., 502.  
 estimation of nitrogen tetroxide in (CHAMPION and PELLET), 1877, i., 228.  
 estimation of sulphur and phosphorus in (BRÜGELMANN), 1876, i., 743; 1877, i., 739.  
 containing fluorine and boron, analyses of (LANDOLPH), 1880, A., 61.  
 containing halogens or nitrogen, analysis of (JOHNSON), 1876, i., 178; (SCHIFF), 1879, A., 555; (PERKIN), 1880, T., 121, 457.
- Compounds, fatty**, reactions of, under energetic chlorination (KRAFFT), 1876, ii., 503; 1877, ii., 726.  
 nitrated, action of acids on (MEYER and LOCHER), 1876, i., 903.  
 See also Fatty series.
- Compounds, homologous**. See Homologues.
- Compounds, inorganic**, formation of, at a temperature considerably above that of their decomposition (TROOST and HAUTEFEUILLE), 1877, ii., 273.  
 relation between the molecular properties of, and their action on living animal organisms (BLAKE), 1875, 96; 1881, A., 629; 1882, A., 879.  
 solid, determination of the specific refraction of, in solution (BEDSON and WILLIAMS), 1882, A., 351.  
 volume constitution of (SCHRÖDER), 1874, 760, 874; 1877, ii., 404, 698; 1878, A., 926; 1879, A., 768; 1881, A., 137.  
 remarkable regularity of volume-relations of definite series of (SCHRÖDER), 1877, ii., 108.  
 melting and boiling points of certain (CARNELEY and WILLIAMS), 1879, T., 563; 1880, T., 125.
- Compounds, liquid**, volume-constitution of (SCHRÖDER), 1881, A., 13, 220; 1882, A., 458.
- Compounds, metamerie**, influence of the position of the oxygen on the boiling points of (NAUMANN), 1874, 529, 563.
- Compounds, unsaturated**, so-called (FITTING), 1876, i., 897; 1877, i., 61, 97; ii., 429, 735; 1879, A., 376; 1880, A., 120.
- Compounds, unsaturated**, products obtained by the action of hypochlorous acid on (HENRY), 1875, 443, 1179; 1876, ii., 284.  
 addition of oxygen to (HENRY), 1880, A., 231.
- Comptonite** (BOŘICKÝ), 1874, 236.
- Comstock lode**, heat of (CHURCH), 1880, A., 858.
- Conchicine**. See under Alkaloids.
- Concretion balls**, curious, derived from a colliery mineral water (ANDREWS), 1879, A., 1024.
- Concretions** taken from an abscess on the jawbone of a horse, composition of (THOMS and V. BERG), 1880, A., 333.
- Condensation**, circuit produced by (MOSER), 1881, A., 1092.  
 during the formation of fluid or solid compounds (BAUMHAUER), 1875, 417.  
 of a mixture of air and steam upon cold surfaces (REYNOLDS), 1873, 1001.
- Conductivity**, electrical. See Electrical conductivity under Electrochemistry.  
 heat. See under Thermochemistry.
- Confectionery**, adulteration of (FISCHER), 1880, A., 422.
- Conglutin**, action of salt solutions on (RITTHAUSEN), 1881, A., 1160.  
 production of aspartic acid by the oxidation of (PORT), 1873, 628.
- Conhydrine** (*oxyconine*) (SCHORM), 1882, A., 215.
- Coniferin** (SINGER), 1882, A., 1124.  
 action of acetic anhydride on, and on some of its derivatives (TIEMANN and NAGAI), 1876, i., 77.  
 conversion of, into vanillin (TIEMANN and HAARMANN), 1874, 895.
- Coniferyl derivatives** (TIEMANN), 1876, ii., 85.  
 alcohol, constitution of (TIEMANN), 1876, i., 76; 1878, A., 578.
- Coniine** and its derivatives. See under Alkaloids.
- Coniinenitrosamine** (*azoconhydrine*) (V. HOFMANN), 1881, A., 746.
- Conimene** (STENHOUSE and GROVES), 1876, i., 175.
- Conium**, alkaloid from (BRETET), 1880, A., 425.
- Conquinamine** (*quinidamine*), and its salts (HESSE), 1878, A., 436; 1881, A., 1156; (OFDEMANS), 1881, A., 1154.  
 rotatory power of (HESSE), 1881, A., 1157.

**Conquinine.** See Quinidine under Alkaloids.

**"Contact-zones"** of the aluminous slate and granite block of Barr-Andlau, chemical examination of the (UNGER), 1877, ii., 413.

**Conversion colours** (BALANCHE), 1882, A., 564.

**Convicine** (RITTHAUSEN), 1881, A., 1158.

**Convolvulin** (STEVENSON), 1880, A., 717.

*Convolvulus scammonia*, chemical constituents of (KINGZETT and FARRIES), 1877, ii., 904.

**Conylene** (*oclineene*) (V. HOFMANN), 1881, A., 746.

**Conylethylalkaline.** See Hydroxyethyl-coniine.

**Copaiba balsam.** See Balsam. Copaiba.

**Copaivic acid** (RUSH), 1879, A., 1038.  
commercial so-called, constituents of (BRIX), 1882, A., 65.

*metaCopaivic acid*, commercial so-called, constituents of (BRIX), 1882, A., 65.

**Copal**, composition of, and its alteration by fusion, and copal varnish, preparation of (SCHWARZ), 1878, A., 627.

**Copiapite**, optical properties of (DES CLOIZEAUX), 1882, A., 281.

**Copper ore**, a new, and its metallurgy (HUNT), 1878, A., 480.

ores (FRENZEL), 1878, A., 708.

origin of some (BURGHARDT), 1879, A., 17.

phosphorised (SCHRAUF), 1881, A., 368.

Canadian (HOFFMANN), 1881, A., 546.

metallic, crystals of, from the mines of Coro-Coro in Bolivia (DOMEVKO), 1881, A., 997.

of Lake Superior, crystallographical observations on (VOM RATII), 1878, A., 944.

from New South Wales (LIVERSIDGE), 1881, A., 992.

presence of, in cast-iron (KERN), 1877, i., 235.

presence of, in the animal organism (BERGERON and L'HÔTE), 1875, 477; (GIUSTI), 1880, A., 275; (BIZIO), 1880, A., 565.

presence of, in the blood of wild graminivorous animals (CLOËZ), 1877, ii., 346.

distribution of, in primordial rocks, and in the sedimentary deposits derived from them (DIEULAFAIT), 1879, A., 1020.

presence of, in the plants which grow on the primordial rocks (DIEULAFAIT), 1880, A., 494.

**Copper**, atomicity of (LUDWIG), 1873, 1011.

extraction of (HADDAN), 1879, A., 496; (ANON.), 1882, A., 346.

extraction of, from poor ores (ANON.), 1874, 1117; (JEZLER), 1876, i., 795.

new process for extracting, from copper pyrites (FLECHNER), 1882, A., 904.

extraction of, by Momnier's process (ANON.), 1873, 417.

hydrometallic extraction of (LUNGE), 1876, ii., 227.

extraction of, by an acid solution of ferrous chloride (HARCH), 1877, ii., 934.

extraction of, by wet processes (BODE), 1879, A., 757.

extraction of, by Hunt and Douglas' process (WIMMER), 1873, 952; (SIEMENS), 1874, 1023.

loss of, through volatilisation in the Cornish copper assay (MAHONY), 1873, 192; (ROSKELL), 1876, i., 963.

extraction of, at Oker in the Hartz (BRÄUNING), 1878, A., 815.

preparation of, at the Stefans-foundry in the Zips (LANGER), 1881, A., 768.

for elementary analysis, preparation of (WEYL), 1882, A., 1235.

application of phosphorus to the "poling" of (WESTON), 1876, ii., 227; (LISMANN), 1878, A., 538.

refining (HESSE), 1879, A., 989; (ANON.), 1881, A., 768.

improvements in purifying or refining (WILKES and JOHNSON), 1879, A., 423.

use of copper phosphide in the refining of (ROESSLER), 1880, A., 197.

purification of arsenical (GARNIER), 1882, A., 432.

allotropic, so-called, formation and composition of (MACKINTOSH), 1882, A., 428.

allotropic condition of (SCHÜTZENBERGER), 1878, A., 706, 840.

absorption spectrum of (BAYLEY), 1880, T., 834.

spongy, relations between time, temperature, and rate of oxidation of, by hot air (WRIGHT and MENKE), 1880, T., 785.

and its salts, colour relations of (BAYLEY), 1878, A., 377.

colour coefficient of (BAYLEY), 1881, T., 363.

nickel, cobalt, iron, manganese, and chromium, colour properties and relations of (BAYLEY), 1880, T., 828.



**Copper nickel and cobalt, colour relations** of (BOTTOMLEY), 1882, A., 1.  
 reflection from (BAYLEY), 1880, T., 418, 828.  
**agglomeration and deglomeration of** (GLADSTONE and TRIBE), 1878, T., 148.  
**occlusion of hydrogen by** (GLADSTONE and TRIBE), 1878, T., 148; (JOHNSTON), 1879, T., 232.  
**hydrogenised, behaviour of, in different gases** (JOHNSON), 1879, T., 240.  
**estimation of hydrogen occluded by, with special reference to organic analyses** (THUDICHUM and HAKE), 1876, ii., 251.  
**absorption of oxygen by** (HEMPEL), 1882, A., 551.  
**action of different fatty oils on** (THOMSON), 1877, i., 237; (WATSON), 1878, A., 473.  
**action of nitric acid on** (ARMSTRONG and ACWORTH), 1877, ii., 60.  
**action of nitric acid on, in presence of ammonium nitrate** (ACWORTH), 1875, 837.  
**molten, of various degrees of dryness, action of salt on** (MONGER), 1882, A., 669.  
**action of water and various saline solutions on** (CARNELLEY), 1876, ii., 1.  
**influence exerted by ammonium sulphide in preventing the action of various solutions on** (SHAW and CARNELLEY), 1877, i., 642.  
**action of sulphuric acid on** (PICKERING), 1878, T., 112; 1881, T., 401.  
**and iron, sulphuration of, by a mineral water** (DE GOUVENAIN), 1875, 1168.  
**phosphorus in** (LISMANN), 1878, A., 538.  
**influence of the quantity and condition of the, on the copper-zinc couple** (GLADSTONE and TRIBE), 1877, i., 561.  
**metallurgy of** (HAMPE), 1876, i., 973; (HUNT), 1878, A., 480.  
**metallurgy, electrolysis in** (BODE), 1879, A., 760.  
**coating of steel and iron with** (ANON.), 1875, 672.  
**direct deposition of, on cast-iron, wrought-iron, and steel** (WEIL), 1882, A., 670.  
**deposition of, on iron in a magnetic field** (REMSEN), 1881, A., 962.  
**for roofing, valuation of** (MÜLLER), 1880, A., 826.

**Copper, presence of, in food** (DUPRÉ), 1877, ii., 511; (GAUTIER), 1880, A., 490,  
 in preserved green peas (DUPRÉ; PIESSE), 1877, ii., 511.  
 in vegetables (DUPRÉ; MUTER; PIESSE), 1877, ii., 511.  
**testing of extracts for** (HAGER), 1874, 710.  
**poisoning by** (SOKOLOFF), 1878, A., 92.  
**"Copper, moss," formation of** (HUTCHINGS), 1877, ii., 113.  
**Copper alloys, Japanese** (KALISCHER), 1875, 922.  
 with silver, liquation, fusibility and density of (ROBERTS-AUSTEN), 1875, 736.  
 with silver iodide, coefficients of contraction and expansion of (RODWELL), 1882, A., 570.  
 with tin, estimation of the specific electrical resistance of (LODGE), 1880, A., 687.  
 analogy between the conductivity for heat and the induction balance effect of (ROBERTS-AUSTEN), 1880, A., 687.  
**Copper compounds with albumin** (HARNACK), 1882, A., 747.  
 with iron and sulphur, crystals of, from Röras (BRÖGGER), 1881, A., 353.  
**Copper salts, action of ammonia on** (MAUMENÉ), 1882, A., 1266.  
 action of phosphorous and hypophosphorous acids on (RAMMELSBERG), 1873, 13.  
**Cuprammonium chloride, behaviour of, with ferrous sulphide** (STOCK), 1880, A., 12.  
 thallium iodide (JÖRGENSEN), 1873, 476.  
 sulphate, action of potassium ferrocyanide on (GUYARD), 1879, A., 775.  
**Copper antimonate, incandescence of, when heated strongly** (ALLEN), 1881, A., 513.  
 zinc arsenates and phosphates, crystallised (FRIEDEL and SARASIN), 1877, i., 690.  
 arsenide (FRENZEL; WEISBACH), 1873, 850; (DESCAMPS), 1878, A., 705.  
 chlorides, vapour density of (V. and C. MEYER), 1879, A., 767, 875.  
 See also Cuprous and Cupric chlorides.  
 oxychloride. See Atacamite.  
 chromates, basic, and non-existence of copper potassium chromate (ROSENFELD), 1880, A., 853.

**Copper lead chromophosphate** (PISANI), 1882, A., 283.  
 hydride (BERTHELOT; WURTZ), 1880, A., 299.  
 nitrite, a new (VAN DER MEULEN), 1879, A., 693.  
 oxides, heat disturbances during the reduction of, by carbonic oxide, hydrogen and carbon (WRIGHT and LUFF), 1878, T., 3.  
 See also Cupric and Cuprous oxides.  
 phosphide (CHAMPION and PELLET), 1876, i., 519; (RIBAN), 1879, A., 504; (EMMERLING), 1879, A., 508.  
 preparation of (SCHWARZ), 1876, i., 797.  
 use of, in the refining of copper (ROESSLER), 1880, A., 197.  
 phosphides (SIDOR), 1877, ii., 844.  
 double selenides of lead and (PISANI), 1879, A., 440.  
 selenite. See Chalcomenite.  
 silicate. See Chrysocolla.  
 sulphate, absorption spectra of (VOGEL), 1879, A., 190.  
 optical experiment with crystals of (ŠTOLBA), 1874, 944.  
 anhydrous and hydrated, specific gravity of (THORPE and WATTS), 1880, T., 103.  
 dissociation of (NAUMANN), 1875, 426.  
 anhydrous, solubility of, in methylic alcohol (KLEPL), 1882, A., 1274.  
 examination of, by the time method (HANNAY), 1879, T., 460.  
 basic (BREZINA), 1881, A., 524; (STEINMANN), 1882, A., 1266.  
 magnesium, and zinc sulphate, examination of, by the time method (HANNAY), 1879, T., 461.  
 sulphides, and their reactions (PICKERING), 1878, T., 115; 1881, T., 401.  
 See also Cupric and Cuprous sulphides.  
 lead tellurate (GENTH), 1875, 432.  
 thiocarbonate, estimation of carbon disulphide in (FINOT and BERTRAND), 1877, i., 744.  
 lead vanadate from Laurium (PISANI), 1882, A., 472.

#### Cuprous salts:—

chloride (*copper dichloride*) (LUPTON), 1875, 342; (ROSENFELD), 1879, A., 693.  
 preparation of (HEUMANN), 1874, 872; (BÖTTGER), 1874, 872; 1878, A., 113.

#### Cuprous salts:—

chloride (*copper dichloride*), thermochemistry of (BERTHELOT), 1880, A., 208; 1881, A., 6.  
 heat of formation of (THOMSEN), 1880, A., 361.  
 heat of formation of the compound of carbonic oxide with (HAMMERL), 1879, A., 888.  
 absorption of carbonic oxide and hydrochloric acid by (THOMAS), 1878, T., 72.  
 action of, on silver sulphide, and on light- and dark-red silver ore (RAMMELSBERG), 1881, T., 376.  
 compounds of hydrogen phosphide with (RIBAN), 1879, A., 503.  
 method of titration based on the conversion of, into cupric chloride (JEAN), 1875, 1286.  
 iodide, heat of formation of (BERTHELOT), 1881, A., 7.  
 potassium iodide from (LANGEIN), 1874, 1060.  
 estimation of iodine in (ULEX), 1876, i., 747.  
 oxide ( $\text{Cu}_2\text{O}$ ), preparation of (WRIGHT and LUFF), 1878, T., 7.  
 of a fine vermilion colour, preparation of (BÖTTGER), 1873, 355.  
 and zinc couple (GLADSTONE and TRIBE), 1879, T., 576.  
 use of (KERN), 1876, i., 741.  
 and ferric oxide, natural compound of (FRIEDEL), 1873, 1107.  
 detection of, in presence of cupric and other metallic oxides (ORLOWSKI), 1882, A., 1232.  
 estimation of, in copper (RAMMELSBERG), 1878, A., 92; (HAMPE), 1878, A., 608.  
 sulphide, preparation of (PICKERING), 1878, T., 120; 1881, T., 402.  
 crystallised, formed from ancient coins in hot springs (DAUBRÉE), 1882, A., 142.  
 action of selenium on (POTILIZIN), 1879, A., 771.  
 behaviour of, to a solution of silver nitrate (SCHNEIDER), 1875, 133, 612.  
 and silver chloride in presence of ammonia (RAMMELSBERG), 1881, T., 383.  
 See also Copper glance.  
 sulphites and their derivatives (ETARD), 1882, A., 280, 1028, 1165.  
 thioarsenate, native (MACFARVE), 1875, 46.  
 thiosulphate, double salts of (KESSEL), 1878, A., 113; 1879, A., 124.

**Cupric salts:—**

- chloride, colour of (HARTLEY), 1875, 206.  
 action of aluminium on (TOMMASI), 1882, A., 1266.  
 action of, on arsenious and antimonious sulphides (RAMMELSBURG), 1881, T., 378.  
 action of, on mercuric sulphide (HEUMANN), 1875, 132.  
 action of phosphorus on (CROSS and HIGGIN), 1879, T., 254.  
 action of, on silver and silver sulphide, and on light-red and dark-red silver ore (RAMMELSBURG), 1881, T., 375.  
 compound of, with aniline (DESTREM), 1879, A., 376.  
 hydroxide, decomposition of sodium salts by (TOMMASI), 1881, A., 978.  
 reduction of, in alkaline liquids (WORM-MÜLLER and HAGEN), 1881, A., 795.  
 compounds of grape-sugar with (WORM-MÜLLER and HAGEN), 1878, A., 967; (SALKOWSKI), 1879, A., 778.  
 aromatic compounds which prevent the precipitation of, by alkalis (WEITH), 1876, ii., 76.  
 nitrate, action of hydrogen on (RUSSELL), 1874, 11.  
 oxide (CuO), preparation of (WRIGHT and LUFF), 1878, T., 6.  
 method of preparing, from the sulphate, so as not to obtain basic sulphates (SOLDANI), 1877, i., 283.  
 action of ammonia on (MAUMENÉ), 1882, A., 1266.  
 action of ether on (GUEROUT), 1874, 1152.  
 reduction of (WRIGHT and LUFF; WRIGHT and RENNIE), 1879, T., 475.  
 reducing power of (BROWN and HERON), 1879, T., 619.  
 reduction of, by grape-sugar in neutral solutions (WORM-MÜLLER and HAGEN), 1882, A., 558.  
 rehydration of (CROSS), 1879, T., 798.  
 oxidising action of (CAZENÈVE), 1880, A., 32, 232.  
 and zinc couple (GLADSTONE and TRIBE), 1879, T., 577.  
 compounds of proteids with (RITTHAUSEN and POTT), 1874, 702.  
 use of, for the separation of alumina and the higher oxides from protoxides (LECOQ DE BOISBAUDRAN), 1882, A., 897.

**Cupric salts:—**

- phosphate. See Veszeleyite.  
 sulphide (CHAMPION and PELLET), 1876, i., 519.  
 preparation of (PICKERING), 1878, T., 115; 1881, T., 401.  
 precipitated, composition of (THOMSEN), 1879, A., 206.  
 evolution of sulphur from, by heat alone (PICKERING), 1881, T., 406.  
 compound of, with silver chloride in presence of ammonia (RAMMELSBURG), 1881, T., 384.  
 See also Covellite.  
**Copper organic compounds:—**  
 acetylde and its hydrate (BERTHELOT), 1875, 745.  
 albuminate (HARNACK), 1882, A., 747.  
 potassium cyanide (VIDAU), 1877, i., 456.  
 cuprammonium oxyferrocyanide (GUYARD), 1879, A., 775.  
**Copper detection, estimation and separation:—**  
 detection of (CRESTI), 1877, ii., 803; (PURGOTTI), 1878, A., 754; (ENDEMANN and PROCHAZKA), 1880, A., 924; (WAGNER), 1882, A., 556.  
 detection of, in cast-iron, steel, and wrought-iron (ANON.), 1877, ii., 926.  
 detection of zinc and, in the human body (RAOULT and BRETON), 1877, ii., 928.  
 estimation of (LAGRANGE), 1875, 186, 382; (MUIR), 1876, i., 751; (MERRICK), 1876, i., 962; (VOLHARD), 1878, A., 749; (WEIL), 1879, A., 276; (ULBRICHT), 1880, A., 510; (CASAMAJOR), 1882, A., 776.  
 estimation, colorimetric, of (CARNELLEY), 1876, i., 751; (BAYLEY), 1880, T., 418, 828.  
 estimation, electrolytic, of (ANON.), 1877, ii., 925; (OHL), 1880, A., 583; (MACKINTOSH), 1882, A., 428, 660.  
 manganese, lead, zinc, nickel and their alloys, estimation of (RICHE), 1877, ii., 924; 1878, A., 750.  
 estimation of, as cuprous sulphide (BUSSE), 1878, A., 337.  
 estimation of, by potassium xanthate (GRETE), 1876, ii., 551; 1877, ii., 929; 1878, A., 341.  
 estimation of, by sodium hyposulphite (Na<sub>2</sub>SO<sub>2</sub>) (BERNTSEN), 1881, A., 310.  
 estimation of, as thiocyanate (BUSSE), 1878, A., 337.

**Copper, estimation and separation:**—  
method of estimating sulphur and,  
in cupreous iron pyrites, and in the  
burnt ore before and after lixiviation  
(FRESENIUS), 1877, ii., 650;  
1878, A., 529.

estimation of, in minium (BLUNT),  
1875, 1291.

estimation of, in "ore-reducer" slag  
(CLOUD), 1877, ii., 650.

estimation of, in vinegar (RICHE),  
1877, ii., 927.

estimation of impurities in (FRESENIUS), 1882, A., 1232.

estimation of arsenic in (SEXTON),  
1882, A., 1135.

estimation of cuprous oxide in (RAMMELSBURG), 1878, A., 92; (HAMPE),  
1878, A., 608.

estimation and separation of (CLASSEN), 1879, A., 971.

separation of, from the precious  
metals (HUNT), 1882, A., 119.

separation of, from cadmium and  
zinc (HUTCHINSON), 1880, A., 748.

separation of, from nickel (BUSSE),  
1878, A., 337.

separation of, from zinc, by precipita-  
tion with sulphuretted hydrogen  
(LARSEN), 1881, A., 467.

**Copper axe-heads** from Beth Saour near  
Bethlehem, composition of (FLIGHT),  
1882, T., 144.

**Copper-cadmium couple**, action of, on  
a solution of cadmium sulphate  
(RAOULT), 1873, 464.

**Copper glance** from Catamarca (SCHIN-  
NERER), 1873, 851.

and pucherite, artificial (FRENZEL),  
1876, i., 51.

See also Cuprous sulphide under  
Copper.

**Copper-iron group**, colour properties  
and colour relations of the metals of  
the (BAYLEY), 1880, T., 418, 829;  
1881, T., 362.

**Copper-nickel.** See Niccolite.

**Copper-nickel coinage**, facts relating to  
the history of (FLIGHT), 1882, T., 134.

**Copper pipes**, contamination of water  
by (REICHARDT), 1874, 97.

**Copper-pitchblende**, composition of  
(HUTCHINGS), 1877, i., 55.

**Copper plates**, steeling (BÖTTGER), 1879,  
A., 186.

**Copper-plating** (WEIL), 1882, A., 670,  
782.

on steel (GAUDOIN), 1873, 955.

**Copper-pyrites** (DÖLL), 1875, 873.

twin crystal of, from Grünau on the  
Sieg (VOM RATH), 1874, 1074.

**Copper-pyrites** from Stassfurt (KRAUSE),  
1876, i., 346.

intergrown with fahlerz (SADEBECK),  
1880, A., 855.

new process for the treatment of, in  
the dry way (SIMONIN), 1879, A.,  
563.

new process for extracting copper  
from (FLECHNER), 1882, A., 904.

extraction of the precious metals from  
(CLAUDET), 1873, 97; (DIXON),  
1879, A., 288.

extraction of silver from (GIBB), 1875,  
921.

**Copper-ruby glass** and cognate varieties  
(EBELL), 1875, 485.

**Copper spear-heads**, from Cyprus, com-  
position of (FLIGHT), 1882, T., 143.

**Copper spirals**, absorption of hydrogen  
by (LIETZENMAYER), 1878, A., 377.

**Copper zinc couple**, preparation of  
(GLADSTONE and TRIBE), 1877, i.,  
561; 1879, T., 567.

action of, on carbon compounds  
(GLADSTONE and TRIBE), 1873,  
445, 678, 961; 1874, 208, 406, 410,  
615; 1875, 508; 1879, T., 107.

action of, on nitrates (GLADSTONE and  
TRIBE), 1878, T., 142; (WILLIAMS),  
1881, T., 100.

action of, on nitrobenzene (GLAD-  
STONE and TRIBE), 1878, T., 306.

action of, on alkaline oxy-salts  
(GLADSTONE and TRIBE), 1878, T.,  
139.

action of, on potassium chlorate and  
perchlorate (ECCLES), 1876, i., 856;  
(GLADSTONE and TRIBE), 1878, T.,  
147.

analogies between its action and that  
of occluded and nascent hydrogen  
(GLADSTONE and TRIBE), 1878, T.,  
306.

**Coprolites**, Cambridge, composition of  
(HUGHES), 1875, 913.

**Coptine** from *Coptis trifolia* (GROSS),  
1874, 912.

*Coptis trifolia*, chemical constituents  
of (GROSS), 1874, 912.

**Coquimbite** (ARZUNI), 1881, A., 397.

"**Coral-limestone**" (MARTIN), 1881,  
A., 392.

from the South Sea Islands, composi-  
tion of (LIVERSIDGE), 1881, A.,  
1011.

**Coral reef** (LIVERSIDGE), 1881, A., 1011.

**Corallin.** See Rosolic acid.

**Corallinphthalein** (ZULKOWSKI), 1878,  
A., 872; 1882, A., 1291.

**Corallinphthalin** (ZULKOWSKI), 1881,  
A., 899.



- Cordierite** (VOM RATH), 1881, A., 549.  
pseudomorphs of (WICHMANN), 1875, 625.
- Coriandrum sativum**, essential oil of the fruit of (GROSSER), 1882, A., 525.
- Cork**, specific gravity of (ROLLMANN), 1873, 958.  
oxidation of (DALE and SCHORLEMER), 1879, T., 685.
- Corks** for bottles, method of rendering air-tight and indestructible (RUSCHHAUPT), 1873, 208.  
renewal of old (MOHR), 1877, ii., 244.
- Corn**. See under Agricultural Chemistry.
- Corn-cockle seeds**, presence of, in meals (PETERMANN), 1881, A., 317.  
as fodder and distillery material (ULBRICHT), 1880, A., 501.
- Corn ergot** (*cornusmut*; *Ustilago maydis*), composition of (PARSONS), 1882, A., 785.
- Cornicularic acid**, and its lactone and constitution (SPIEGEL), 1882, A., 1077.
- Corpses**, human, formation of poisonous alkaloids in (SELM), 1879, A., 734.  
natural poison of the (MORIGGIA), 1877, i., 331.  
poisonous nature of the extract from (MORIGGIA and BATTISTINI), 1876, ii., 647.  
examination of, for alkaloids (SCHWANERT), 1875, [293; (RENNARD), 1877, ii., 230.
- Corundophilite** (*amersite*) (PISANI), 1876, ii., 610.
- Corundum**, of North Carolina and Georgia (SHEPARD), 1873, 257.  
of N. Carolina, Georgia and Montana, and the minerals accompanying it (SMITH), 1873, 1204.  
in dolerite from Ovifak (SMITH), 1879, A., 894.  
of Biella, in Piedmont (COSSA), 1881, A., 385.  
pseudomorphs of spinel after (GENTH), 1874, 549.  
and topaz, inferences as to the formation of (HARTLEY), 1876, ii., 248.  
artificial production of (FREMY and FEIL), 1878, A., 203; (MEUNIER), 1880, A., 447.
- Cosalite**. See Rezbanyite.
- Cosmic dust** (v. NORDENSKIÖLD), 1874, 1148.
- Cossaite** (TSCHERMAK), 1880, A., 533.
- Cossyrite**, a new mineral from Liparite lavas of the Island of Pantellaria (FÖRSTNER), 1882, A., 152.
- Cotarnamic acid**, hydrochloride of (v. GERICHTEN), 1881, A., 445.
- Cotarnine**. See under Alkaloids.
- Coto-barks** and their constituents (WITTSTEIN), 1876, i., 736; (v. JOBST), 1876, ii., 425; 1877, i., 480; (v. JOBST and HESSE), 1877, ii., 201; 1878, A., 733; 1880, A., 325.
- Cotogenin** (v. JOBST and HESSE), 1880, A., 326.
- paraCotoic acid** (v. JOBST and HESSE), 1880, A., 326.
- Cotoin** (v. JOBST), 1876, ii., 425; 1877, i., 480; (v. JOBST and HESSE), 1880, A., 326.  
*tribromo-* (v. JOBST and HESSE), 1880, A., 326.
- paraCotoin** (v. JOBST and HESSE), 1877, ii., 201; 1880, A., 326.
- paraCotoles** and **paracotenes** (v. JOBST and HESSE), 1880, A., 328.
- Cotton**, heat conductivity of (SCHUMMEISTER), 1878, A., 831.  
action of alkalis on flax and (JEANMAIRE), 1874, 931.  
detection of, in linen stuffs (BÜTTGER), 1874, 1019; 1878, A., 918.  
mildew on printed (WITZ), 1876, i., 820.  
combinations of aniline-black with other colours on (KIELMEYER), 1876, i., 816.  
new magenta dye for (ANON.), 1873, 208.  
lilac dye for (SAUVAGE), 1874, 1027.  
Orleans yellow on (KIELMEYER), 1876, i., 819.  
dyeing with "rouge de Tournai" (ANON.), 1873, 423.  
died Turkey-red, analysis of (KOPP), 1876, i., 782.
- Cotton goods**, direct formation of methyl-violet in (DUPUY), 1876, i., 817.  
effects produced on, by ozone and frost (GOPPELSROEDER), 1876, ii., 231.  
finishing of (ANON.), 1873, 1274.  
"hai-thao," a new substance used for finishing (HEILMANN), 1876, i., 981.
- Cotton blue** (ANON.), 1879, A., 419.
- Cotton root bark**, analyses of (DRUEDING), 1877, ii., 915.
- Cotton seed meal** as fodder for milch cows (RITTER), 1880, A., 500; (POGGE), 1882, A., 321; (PRESER), 1881, A., 636.  
oil (SCHEIBE), 1882, A., 436.  
detection of, in olive oil (NICKELS), 1880, A., 925; (ZECCHINI), 1882, A., 662.

- Cotton-waste**, oily, spontaneous combustion of (GALLETLY), 1874, 727; (COLEMAN), 1878, A., 258.
- Couch-grass** root, levulose from (MÜLLER), 1874, 39, 170.
- p*-**Coumaric acid**, preparation of, from *p*-nitrocinnamic acid (BENDER), 1882, A., 201.
- Coumarin**, formation of, and of cinnamic and of other analogous acids from the aromatic aldehydes (PERKIN), 1877, i., 388.
- synthesis of, from salicylaldehyde (TIEMANN and HERZFELD), 1877, i., 708.
- acids from (PERKIN), 1877, i., 417.
- isomeric ethers obtained from (PERKIN), 1881, T., 409.
- derivatives, action of heat on some (PERKIN), 1877, i., 420.
- metallic derivatives of (WILLIAMSON), 1875, 850.
- Coumarins** (PERKIN), 1881, T., 439.
- Couples**, galvanic. See Electrochemistry.
- Covellite**, occurring as incrusting pseudomorph on a bronze Celtic axe found on the Salzberg near Hallstadt (v. HOCHSTETTER), 1881, A., 227.
- See also Cupric sulphide under Copper.
- Cows**. See under Agricultural Chemistry.
- Cow-tree**, composition of the milk of (BOUSSINGAULT), 1879, A., 73.
- Cray-fish** shells and horn, composition of (WEISKE), 1877, i., 728.
- Cream**. See under Agricultural Chemistry.
- Cream of tartar**. See Argol and Tartaric acid, potassium hydrogen salt of.
- Creatine** (ENGEL), 1874, 985; (WEYL), 1879, A., 471.
- substitution of mercury for hydrogen in (ENGEL), 1875, 756.
- some reactions of (ENGEL), 1876, i., 943.
- Creatines**, aromatic, and isomerides (GRIESS), 1875, 648, 1031; 1880, A., 803.
- Creatine-group**, compounds belonging to (DUVILLIER), 1880, A., 897.
- Creatinine** (WEYL), 1879, A., 471.
- reactions of (ENGEL), 1876, i., 943; (MASCHKE), 1878, A., 688.
- Creatinine-group**, compounds belonging to (DUVILLIER), 1880, A., 897.
- Cremation** and burial (FISCHER), 1875, 676, 1304.
- Crenic acid**, ammonium salt of, and carbamide in spring water (PHIPSON), 1878, A., 754.
- Creosol** (BÖTSCH), 1882, A., 210.
- derivatives of (TIEMANN and KOPPE), 1882, A., 54.
- Creosote** (WILLIAMS), 1874, 583.
- from beechwood-tar (v. HOFMANN), 1875, 568; (HARTMANN and HAUERS), 1882, A., 1328.
- constituents of (TIEMANN and MENDELSSOHN), 1876, i., 74; 1877, ii., 888.
- indifferent oils of (TIEMANN and MENDELSSOHN), 1876, i., 75.
- distinction between phenol and (ANON.), 1873, 193.
- behaviour of different reagents on (GRÄTZEL), 1877, ii., 515.
- Rhenish beech-wood, derivatives of (BRÄUNINGER), 1878, A., 146.
- distinctive tests for (ALLEN), 1879, A., 182.
- Cressaurin**, preparation of (NENCKI), 1882, A., 1201.
- Cresol** colouring matters. See Colouring matters.
- derivatives (BIEDERMANN), 1873, 898; (v. HOFMANN and v. MILLER), 1881, A., 592.
- chloro- (BIEDERMANN), 1873, 898.
- o*-**Cresol** (*o*-hydroxytoluene) (KOLBE), 1874, 373; (v. GERICHTEN and RÜSSLER), 1879, A., 323.
- and other ortho-compounds (KEKULÉ), 1875, 64.
- 5-amido-, action of sodium formate on (v. HOFMANN and v. MILLER), 1881, A., 593.
- m*-bromo- (WROBLEWSKI), 1874, 52.
- 3-nitro- (v. HOFMANN and v. MILLER), 1881, A., 593.
- 5-nitro- (NEVILLE and WINTHER), 1882, T., 424.
- 3:5-dinitro- (NEVILLE and WINTHER), 1880, T., 631.
- m*-**Cresol** from *m*-hydroxyuvitic acid (OPPENHEIM and PFAFF), 1875, 1261.
- m*-bromo- (NEVILLE and WINTHER), 1882, T., 421.
- 6-nitro- (BERTONI), 1882, A., 1198.
- isomeric nitro- (ORTH), 1882, A., 1198.
- trinitro- (WURSTER and RIEDEL), 1880, A., 109.
- 4-nitroso- (WURSTER and RIEDEL), 1880, A., 109; (BERTONI), 1882, A., 1198.
- p*-**Cresol** (JACOBSEN), 1878, A., 582; (BAUMANN and BRIEGER), 1879, A., 789.
- action of aluminium iodide on, in presence of aluminium (GLADSTONE and TRIBE), 1881, T., 9.

- p*-Cresol, action of bromine on (BAUMANN and BRIEGER), 1879, A., 789.  
 (*p*-cresylic acid) as a disinfectant (ENDEMANN), 1876, i., 990.  
 aluminium salt of (GLADSTONE and TRIBE), 1881, T., 9.  
 3-amido- (v. HOFMANN and v. MILLER), 1881, A., 593.  
*tetrabromo*- (BAUMANN and BRIEGER), 1879, A., 789.  
*dibromonitro*- (KNECHT), 1882, A., 969.  
 2-nitro- (KNECHT), 1882, A., 728.  
 3-nitro- (WAGNER), 1875, 256.  
 3-mono- and 3:5-dinitro- (v. HOFMANN and v. MILLER), 1881, A., 593.  
 isomeric nitro- (NEVILLE and WINTHER), 1882, T., 426.  
 3:5-dinitro- (NEVILLE and WINTHER), 1880, T., 631; (STAEDL), 1881, A., 724.  
 ethyl ether of, and its reduction (NÖLTING and v. SALIS), 1881, A., 725.  
**Cresols**, isomeric, in coal-tar (SOUTHWORTH), 1874, 61; (IHLE), 1877, i., 708.  
 preparation of (TIEMANN and SCHOTTEN), 1878, A., 875.  
 formation of, during putrefaction (BAUMANN and BRIEGER), 1879, A., 789.  
 action of carbon tetrachloride on (SCHALL), 1879, A., 791.  
 action of ethylic chloroformate on (BENDER), 1881, A., 48.  
 distinctive tests for (ALLEN), 1879, A., 182.  
 nitro- (NÖLTING and v. SALIS), 1881, A., 725; (NEVILLE and WINTHER), 1882, T., 417.  
*dinitro*- (PICCARD), 1875, 1022.  
*o*-Cresolphthalein, and *dibromo*- (FRAUDE), 1879, A., 634.  
*p*-Cresol-phthalein and -phthalin, their anhydrides and their derivatives (DREWSSEN), 1882, A., 1098.  
*o*-Cresol-phthalidin and -phthalin (FRAUDE), 1879, A., 635.  
*o*-Cresolsulphonic acid, conversion of *m*-bromotoluene-*o*-sulphonic acid into (PAGEL), 1875, 899.  
 Cresol-*o*-sulphonic acid, *p*-bromo- (SCHÄFER), 1875, 370.  
 Cresol-*m*-sulphonic acid, *o*-bromo- (LIMPRICHT), 1875, 264; (SCHÄFER), 1875, 369.  
*o*-Cresol-4-sulphonic acid, nitro- (HAYDUCK), 1874, 1096; 1875, 461.  
*o*-Cresol-5-sulphonic acid (GERVER), 1874, 168; (NEVILLE and WINTHER), 1880, T., 631.  
*p*-Cresol-2-sulphonic acid (JENSSEN), 1875, 77.  
*p*-Cresol-3-sulphonic acid (v. PECHMANN), 1875, 79.  
 Cresorcinol. See 2:4-Dihydroxytoluene.  
 Cresotic acids. See Hydroxytoluic acids.  
 Cress, formation of starch in the cotyledons of (BÖHM), 1876, i., 952.  
 manuring of, with dicalcium phosphate on soils free from humus (ALEERT and SIEGFRIED), 1881, A., 462.  
**Cresyl**-. See Toly-.  
 Cresyl ether. See Ditolylic oxide.  
*p*-Cresylic acid. See *p*-Cresol.  
 Critical point (RAMSAY), 1882, A., 136, 267.  
 Critical pressure of substances (MEYER; PETERSSON), 1881, A., 133.  
 Critical temperature. See Thermochemistry.  
 Crocidolite (*krokidolite*) (DOELTER), 1881, A., 553; (FISCHER), 1881, A., 990.  
 South African quartz a pseudomorph after (WIBEL), 1873, 739, 1209.  
 Crocoite. See Lead chromate.  
 Crocoite-group (SILLIMAN), 1881, A., 1109.  
 Cromfordite (*phosgenite*), formation of, at Bourbonne-les-Bains (DAUBRÉE), 1876, i., 533.  
 from Monte Ponì, Sardinia (HANSEL), 1879, A., 604.  
 Cronstedtite (JANOVSKY), 1875, 1165.  
 a variety of (FIELD), 1878, A., 480.  
 Crops. See under Agricultural Chemistry.  
 Crossopterine (HESSE), 1879, A., 71.  
 Crotaconic acid (CLAUS), 1876, i., 934; 1877, ii., 592; 1878, A., 856.  
 Croton oil, volatile acids of (SCHMIDT and BERENDES), 1877, ii., 593; 1879, A., 221.  
 Crotonaldehyde and its derivatives (LIEBEN and ZEISEL), 1879, A., 615; 1881, A., 710.  
 preparation of (NEWBURY), 1881, A., 405.  
 action of ammonia on (WURTZ), 1879, A., 780.  
 Crotonamide,  $\alpha$ -chloro- (PINNER and KLEIN), 1879, A., 41.  
 Crotonic acid (CLAUS), 1878, A., 855.  
 formation of (HELL and LAUBER), 1874, 887.  
 formation of, from allylic cyanide (PINNER), 1880, A., 99.

- Crotonic acid**, molecular refraction of (BRÜHL), 1882, A., 827.  
 $\alpha$ - and  $\beta$ -bromo- (MICHAEL and NORTON), 1881, A., 798.  
 $\beta$ -chloro- (*chlorotetracrylic acid*), behaviour of, on fusion (GEUTHER), 1880, A., 630.
- Crotonic acids**, two isomeric (BURTON), 1882, A., 712.  
determination of the constitution of (V. HEMILIAN), 1874, 682.  
 $\beta$ -chloro-, decomposition of, by alkalis (FRIEDRICH), 1882, A., 945.
- Crotonic chloral**. See Butaldehyde, trichloro-.
- Crotonic chlorides**, chloro-, two isomeric (BURTON), 1882, A., 712.
- Crotonitrile** (*allylic cyanide*), and the products of its saponification (PINNER), 1880, A., 99.  
compound of, with ethylic alcohol (RINNE), 1873, 879.
- Crotonyl iodide**. See Iodobutylene.
- Crotonylamine** (V. HOFMANN), 1879, A., 712.
- Crotonylcarbamide**, chloro- (PINNER and KLEIN), 1879, A., 41.
- Crotonylene**. See Butinine.
- Crotonylthiocarbimide** (V. HOFMANN), 1874, 792.
- Crotyl acetate**. See Butenyl acetate.
- Crucibles**, new method of supporting, in gas furnaces (GRIFFIN), 1875, 677.  
gold-lined (SMITH), 1875, 480.
- Crust** produced upon terrestrial rocks by atmospheric agency, compared with the black coating of certain meteorites (MEUNIER), 1873, 141.
- Crustaceans**, observations on some liquids of the organisms of (RABUTEAU and PAPILLON), 1873, 1150.
- "**Cry of tin**," phenomenon commonly called (DOUGLAS), 1881, A., 783.
- Cryohydrates** (GUTHRIE), 1875, 333, 531; 1876, i., 336; ii., 169; 1877, i., 36; 1879, A., 423; (OFFER), 1881, A., 216.
- Cryolite**, composition of (BRANDL), 1882, A., 1176.  
and pachnolite (KNOP), 1877, ii., 281.
- Cryptidine**, *tetrachloro*-, formed by the action of nascent hydrogen on cinchonine (ZORN), 1874, 484.
- Cryptogamic life**, conversion of alcohol into ethylic acetate by the (supposed) agency of (RIMMINGTON), 1875, 284.
- Cryptogams**, occurrence of aluminium in certain (CHURCH), 1875, 283.
- Cryptohalite** (VOM RATH), 1878, A., 475.
- Cryptolite**. See Monazite.
- Cryptophanic acid** (THUDICHUM), 1878, A., 81.
- Crystal** and glass, ancient, composition of (PELIGOT), 1877, i., 234; 1878, A., 646.  
crusts or shells (ZERRENNER), 1876, i., 54.
- Crystallbumin** and **crystallfibrin** (BÉCHAMP), 1880, A., 816.
- Crystallin**, non-identity of the soluble albuminoids of, with those of white of egg and serum (BÉCHAMP), 1880, A., 815.
- Crystalline forms** and thermo-electric properties, relations between (FRIEDEL), 1874, 538.
- Crystallization**, theory of (DE COPPET), 1876, i., 184.  
and solution, theory of (LECOQ DE BOISBAUDRAN), 1875, 1235.  
by thermo-reduction (LIVERSIDGE), 1881, A., 687.  
from supersaturated solutions of compound salts (THOMSON and BLOXAM), 1882, T., 379.  
water of. See under Water.
- Crystallogenic observations** (V. LANG), 1873, 471; (KLEIN), 1873, 584; (BREZINA), 1873, 857; (HESSENBERG), 1873, 1011; (ANON.), 1876, i., 55; (V. KOKSCHAROFF), 1876, i., 525; (V. LASAULX), 1876, ii., 487; 1877, i., 53; 1881, A., 236; 1882, A., 284; (SELIGMANN), 1881, A., 397; (V. FOULLON), 1882, A., 574.
- Crystallographico-optical investigations** with special reference to isomorphous compounds (TOPSØE and CHRISTIANSEN), 1873, 994.
- Crystallography**, analytical geometric treatment of (LIEBISCH), 1881, A., 398.
- Crystals**, theory of (MALLARD), 1876, ii., 374.  
from atmospheric water (TISSANDIER), 1876, i., 891.  
produced by the action of metals sealed up in carbon disulphide (BRAHAM), 1882, A., 12.  
extracted from cast-iron by ether or petroleum (SMITH), 1879, A., 771.  
formed in the cells of Leclanché's battery (PRIWOZNIK), 1876, ii., 173.  
preparation of large regular (MEYER), 1879, A., 352.  
of one substance in the solution of a different compound, development of (KOPP), 1882, A., 1269.  
simple law for the development and grouping of (JUNGHANN), 1875, 39.  
fundamental forms of (KENNGOTT), 1879, A., 14.



- Crystals**, bubbles in, attraction and repulsion of, by heat, and on the constant vibration of minute bubbles (HARTLEY), 1877, ii., 271.  
 hydrated, dissociation of, at their cleavage surfaces (SCHRÖDER), 1875, 606.  
 Senarmont's method of determining the isothermal surfaces of (RÖNTGEN), 1875, 38.  
 variability of the angles of (PFAFF), 1881, A., 356.  
 regular, determination of the elasticity of, in different directions (GROTH), 1876, ii., 42.  
 unequal solubility of different faces of the same (LECOQ DE BOISBAUDRAN), 1875, 729; (PFAUNDLER), 1876, ii., 43.  
 action of basaltic magma in the state of igneous fusion on, enclosed in rocks and minerals, carried out on the lavas and basalts of the Lower Rhine (LEHMANN), 1874, 1074.  
 filter for separating from extractive matter (MISSAGHI), 1876, i., 876.  
 symmetrical growth of circular polarising (GROTH), 1877, ii., 115.  
 complex, mechanical separation of (v. HAUSHOFER), 1873, 1194.  
 hemihedral, with inclined faces, development of electric polarity in, by pressure (J. and P. CURIE), 1881, A., 2, 338.  
 hemimorphous, development of polar electricity in, by alteration of pressure in the direction of the symmetrical axes (HANKEL), 1881, A., 958.  
 isomorphous, structure of (BAUMHAUER), 1873, 130.  
 pseudomorphic, having the form of orthoclase (PHILLIPS), 1875, 684.  
 step-like and skeleton growth of (SCHARFF), 1880, A., 529.  
 twin-, theory of (v. REUSCH), 1873, 257.  
**Cubanite** (*cuban*), occurrence of, in Sweden (CLEVE), 1873, 851.  
**Cubic acid** (SCHULZE), 1873, 1148.  
**Cubebin** (SCHULZE), 1873, 1148; (WEIDEL), 1878, A., 80.  
**Cubebs**, constituents of (SCHULZE), 1873, 1148; (SCHMIDT), 1877, ii., 344.  
 camphor of (SCHULZE), 1873, 1148; (SCHÄR and WYSS), 1876, i., 942.  
 oil of (SCHULZE), 1873, 1148; (OGGIALORO-TODARO), 1876, ii., 642; (SCHMIDT), 1877, ii., 344.  
*Cucumis Anguria*, colouring matter of (A. and G. DE NEGRI), 1880, A., 267.  
**Cucurbitaceæ** of Uruguay (SACC), 1882, A., 884.  
**Cucúyos**, analysis of the luminous organs of the Mexican (HEINEMANN), 1873, 924.  
**p-Cumarhydrin** (v. JOBST and HESSE), 1877, ii., 201.  
**n-Cumene** (*propylbenzene*) (PATERNÒ and SPICA), 1877, i., 707; (SPICA), 1879, A., 631.  
 action of chromyl dichloride on (ETARD), 1881, A., 582.  
**Cumene** (*isopropylbenzene*), synthesis of (LIEBMANN), 1880, A., 384.  
 specific gravities of (PISATI and PATERNÒ), 1874, 687.  
 action of bromine on, in presence of aluminium bromide (GUSTAVSON), 1878, A., 973.  
 action of chlorine on (KRAFFT and MERZ), 1876, i., 540.  
 compounds, constitution of (PATERNÒ), 1879, A., 308.  
 p-bromo- (JACOBSEN), 1879, A., 624.  
 ψ-Cumene (1:2:4-trimethylbenzene) (JANNASCH), 1875, 888; (JACOBSEN), 1876, ii., 77; 1877, ii., 447; (ADOR and RILLIET), 1879, A., 527; (PREIS and RAYMAN), 1879, A., 623; 1880, A., 463.  
 methylation of (JACOBSEN), 1882, A., 391.  
 isomeric dinitro- (ROMMIER), 1873, 888.  
 ψ-Cumene-phthalic acid (MEIER), 1882, A., 848.  
 ψ-Cumene-5-sulphinic acid, and -5-sulphonic chloride (RADLOFF), 1878, A., 414.  
 ψ-Cumenesulphonic acid (REUTER), 1878, A., 413.  
**Cumenesulphonic acids**, and their amides (SPICA), 1879, A., 631; 1880, A., 166.  
**n-Cumenols** (*propylphenol*), o- and p-, and their derivatives (PATERNÒ and SPICA), 1877, i., 707; (SPICA), 1879, A., 631.  
**m-n-Cumenol** (*m-propylphenol*) (JACOBSEN), 1878, A., 732.  
**o-Cumenol** (*o-isopropylphenol*) (FILETI), 1880, A., 883.  
**p-Cumenol** (PATERNÒ and SPICA), 1877, i., 593.  
**Cumenols**, o- and p- (SPICA), 1880, A., 166, 882.  
 ψ-Cumenol (1:2:4-trimethylphenol), and mono- and di-bromo- (REUTER), 1878, A., 413.  
**Cumenolcarboxylic acid**. See 6-Hydroxy-3:1-cuminic acid.

**Cumenyl-**. See Cumyl-.

**Cumic**. See Cuminic.

**Cumidic acid** (RENARD), 1880, A., 479.

**Cumin oil**. See under Oils, vegetable.

**p-Cuminaldehyde** (*cuminol*) (ETARD), 1880, A., 467.

behaviour of, with potash (MEYER), 1877, ii., 333.

acids from (PERKIN), 1877, i., 396.

and dimethylaniline, some compounds of the leuco-base from (ZIEGLER), 1880, A., 640.

derivatives of (RAAB), 1876, i., 398; 1877, ii., 894.

nitro-, and its derivatives (LIPPMAN and STRECKER), 1879, A., 464; 1880, A., 251.

*iso*Cuminaldehyde (ETARD), 1881, A., 582.

**Cuminamidacetic acid**. See Cumyl-acetic acid,  $\alpha$ -amido-.

**Cuminamide**, thio-, action of nascent hydrogen on the product of the action of iodine on (WANSTRAT), 1873, 910.

**Cuminglycollic acid**. See Phenyl-propylglycollic acid.

*o-n-Cuminic acid* (*o-propylbenzoic acid*) (GABRIEL and MICHAEL), 1878, A., 735.

*p-n-Cuminic acid* (*p-propylbenzoic acid*) (PATERNÒ and SPICA), 1878, A., 139, 296; (KÖRNER), 1879, A., 142; (PATERNÒ), 1879, A., 321.

synthesis and oxidation of (MEYER and MÜLLER), 1882, A., 840.

**Cuminic acid** (*p-isopropylbenzoic acid*) (BEILSTEIN and KUPFFER), 1874, 161.

constitution of (MEYER and MÜLLER), 1882, A., 971.

crystalline form of (PANEBIANCO), 1880, A., 549.

oxidation of, with potassium permanganate (MEYER), 1878, A., 878.

**Cuminic acid**, *m*-amido-, and some of its salts (LIPPMANN and LANGE), 1881, A., 276.

two modifications of (PATERNÒ and FILETI), 1876, i., 595; (FILETI), 1881, A., 424.

3-bromo- (v. GERICHTEN), 1879, A., 230.

3-nitro- (LIPPMANN and STRECKER), 1879, A., 464; 1880, A., 251.

action of light on (PATERNÒ and FILETI), 1876, i., 595.

3:5-dinitro- (LIPPMANN and STRECKER), 1879, A., 464.

*iso*Cuminic acid [m.p. 51°] (ETARD), 1881, A., 582.

$\psi$ -Cuminic acid (*durylic acid*; 2:4:5-trimethylbenzoic acid) (REUTER), 1878, A., 413.

**Cuminic acid** ( $\alpha$ -*isodurylic acid*) (BIELEFELDT), 1880, A., 38.

**Cuminil**, and **cuminilic acid** (BÖSLER), 1881, A., 421.

**Cuminoin** (BÖSLER), 1881, A., 421; (WIDMAN), 1881, A., 597.

**Cuminol**. See Cuminaldehyde.

**Cuminuric acid**, and its salts (JACOBSEN), 1880, A., 38.

**Cuminyl alcohol** (KRAUT), 1878, A., 973.

action of cyanogen chloride on (SPICA), 1876, i., 582.

cymene from (PATERNÒ and SPICA), 1880, A., 106.

**Cuminyldiacetimide** (RAAB), 1876, i., 398.

**Cumophenols**. See Cumenols.

**Cumyl chloride**. See Cymene,  $\omega$ -chloro-.

$\psi$ -Cumyl mercaptan and disulphide (RADLOFF), 1878, A., 414.

**Cumylacetic acid**,  $\alpha$ -amido- (*cuminamidacetic acid*) (PLÖCHL), 1882, A., 515.

**Cumylacrylic acid**, and its chloride and amide (PERKIN), 1877, i., 396.

**Cumylamidophenanthrol**, and its properties (JAPP and WILCOCK), 1881, T., 226.

**Cumylangelic acid**, and **cumylcrotonic acid** (PERKIN), 1877, i., 401; 1879, T., 136.

**Cumylglycollic acid** and its salts (SPICA), 1880, A., 883.

*p*-Cumylpropionic acid (*hydrocumenylacrylic acid*) (PERKIN), 1877, i., 400.

**Cupreine** (DAUBRÉE), 1882, A., 142.

**Cupreous manganese**. See Lampadite.

**Cupressineæ**, change of colour in certain, during winter (M'NAB), 1874, 493.

**Cupric** and **cuprous salts**. See under Copper.

**Cuprine** (v. GERICHTEN), 1882, A., 313.

**Cupronine** and its hydrobromide (v. GERICHTEN), 1881, A., 446; 1882, A., 870.

**Cupro-uranite** (*uranite*) (RÖSTER), 1878, A., 281.

in the phosphorite of Carceres (WIBEL), 1873, 1110.

**Curare poison**, physiological action of (COLASANTI), 1878, A., 526.

**Curarine** (SACHS), 1878, A., 517.

detection of (FLÜCKIGER), 1873, 654.

$\psi$ -Curarine (BETTELLI), 1876, i., 404.

**Curcas bean**, cake from the (RENOUARD and CORENWINDER), 1882, A., 85.

**Curcumin** (GAJEWSKY), 1873, 504, 760; (JACKSON), 1881, A., 610.

- Curcumin** and its derivatives, and oxidation (JACKSON and MENKE), 1882, A., 1107.
- Curd**, formation of (MUSSO and MENOZZI), 1880, A., 900.  
composition of (RUBNER), 1880, A., 934.
- Currant**, Australian. See *Leptomeria acida*.
- Currents**. See under Electrochemistry.
- Currier's "mucilage"** (CARLES), 1882, A., 1339.
- Curves**, lecture-illustration of (MILLS), 1880, T., 453.
- Cuscamidine** and **cuscamine** and their salts (HESSE), 1880, A., 329.
- Cusconidine** (HESSE), 1878, A., 437.
- Cusconine**. See under Alkaloids.
- Cutch**. See Catechu.
- Cutose** (FREMY), 1877, i., 230.  
certain properties of (FREMY and URBAIN), 1882, A., 420.
- Cyanacetic acid** (VAN'T HOFF), 1875, 251.  
action of bromine on (VAN'T HOFF), 1875, 357.
- Cyanacetocarbamide** and **cyanacetodimethylcarbamide** (MULDER), 1878, A., 786; 1879, A., 619.
- Cyanamide** (DRECHSEL), 1874, 366; 1875, 1184; 1880, A., 307; (VOLHARD), 1874, 463; (MULDER), 1875, 445; (MULDER and ROORDA SMIT), 1875, 446.  
preparation of (DRECHSEL), 1880, A., 307.  
preparation of, from thiocarbamide (VOLHARD), 1874, 575.  
transformation of urea into (FENTON), 1882, T., 262.  
constitution of (MULDER), 1873, 1023; (FILETI and SCHIFF), 1877, ii., 306; (DRECHSEL), 1878, A., 39; 1880, A., 309.
- dicyandiamide** and **melamine**, behaviour of, under the action of heat (DRECHSEL), 1876, ii., 289.  
reactions of (PRAETORIUS-SEIDLER), 1879, A., 910.  
action of benzoic chloride on (GERLICH), 1876, ii., 196.  
action of carbonic anhydride on (MEYER), 1879, A., 303.  
action of chloral on (FILETI and SCHIFF), 1877, ii., 306.  
action of, on dimethylamine hydrochloride (TATARINOFF), 1880, A., 233.  
action of formic and other acids, of hydroxylamine hydrochloride and of phenol on (PRAETORIUS-SEIDLER), 1880, A., 370.
- Cyanamide**, conversion of, into ammelide (ČECH and DEHMEL), 1878, A., 395.  
conversion of, into diethylisocyanamide (FILETI and SCHIFF), 1877, ii., 307.  
formation of thiocarbamide from (BAUMANN), 1875, 632.  
additive products of (BAUMANN), 1873, 1024; 1874, 367.  
metallic derivatives of (MULDER), 1873, 1023; (BEILSTEIN), 1874, 147; (DRECHSEL), 1875, 1184; 1880, A., 308; (ENGEL), 1876, i., 909.  
behaviour of, in the organism (GERGENS and BAUMANN), 1876, ii., 110.
- isoCyanamide (carbodiimide)** (MULDER), 1873, 1023.
- Cyanamidoamalic acid** (ANDREASCH), 1882, A., 1056.
- "diCyanamidobenzoyl"** (GRIESS), 1879, A., 321, 466.
- Cyanamidocarboxylic acid** (MEYER), 1879, A., 304.
- m-Cyananiline** (GRIESS), 1876, i., 267.
- Cyanconiine** (5-methyl-2:4-diethyl-m-diazine) (v. MEYER), 1881, A., 54.
- d/Cyandiamide** (MULDER), 1873, 1024; (BÄSSLER), 1878, A., 214; (ANDREASCH), 1880, A., 237.  
formation of, from cyanamide (DRECHSEL), 1875, 1184.  
melamine, and cyanamide, behaviour of, under the action of heat (DRECHSEL), 1876, ii., 289.  
metallic derivatives of (ENGEL), 1876, i., 909.
- d/Cyandiamidine**. See Guanylearbamide.
- Cyanethine** (6-amido-5-methyl-2:4-diethyl-m-diazine) (v. MEYER), 1880, A., 31; 1881, A., 54.  
action of mineral acids on (v. MEYER), 1881, A., 54.
- Cyanhydric acid**. See Hydrocyanic acid under Cyanogen.
- Cyanhydrin** (HANRIOT), 1879, A., 1032.
- Cyanhydrins** of aldehydes and ketones, action of aniline on (TIEMANN and PIEST), 1882, A., 50.
- Cyanic acid**. See under Cyanogen.
- Cyanine** (quinoline-blue), decomposition of an acid solution of, by silk (MERZ and WEITH), 1874, 334.
- Cyanite**. See Kyanite.
- Cyanobenzene**. See Benzene, cyano-.
- Cyanocamphor** (HALLER), 1879, A., 329; 1881, A., 1041.
- Cyanocarbimidamidobenzoic acid** (GRIESS), 1879, A., 321, 466.

**Cyanocarbonic acid.** See **Cyanoformic acid**.

**Cyanodiphenyl, mono- and di-** (DOEBNER), 1874, 893.

**diCyanodiphenylethane** (*dibenzylene dihydrazide*) (REIMER), 1882, A., 170.

**diCyanodi-p-tolylguanidine** (LANDGREBE), 1878, A., 216; 1879, A., 53.

**Cyanoform** (FANKUCH), 1873, 362.

**Cyanoformic acid and paracyanoformic acid and their salts and amides** (WEDDIGE), 1875, 447.

**Cyanogen**, presence of, in bromine (PHIPSON), 1874, 94.

spectrum, inversion of (LIVEING and DEWAR), 1882, A., 1.

heat of combustion of (BERTHELOT), 1881, A., 8.

heat of formation of (BERTHELOT), 1879, A., 767; (THOMSEN), 1880, A., 361, 840.

direct combination of, with hydrogen (BERTHELOT), 1879, A., 909.

combination of, with hydrogen under the influence of the silent electric discharge (BOILLOT), 1873, 865.

direct combination of, with the metals (BERTHELOT), 1879, A., 909.

explosion of (BERTHELOT), 1882, A., 453.

amount of heat developed on solution of, in water (HAMMERL), 1880, A., 435.

action of, on albumin (LOEW), 1877, ii., 907.

action of bacteria on (HATTON), 1881, T., 251.

action of hydrochloric acid and alcohol on (PINNEN and KLEIN), 1879, A., 47.

action of zinc ethyl on (FRANKLAND and GRAHAM), 1880, T., 740.

compounds, polymeric, constitution of (NENCKI), 1876, ii., 191, 509; 1877, i., 299.

of gold (LINDBOM), 1878, A., 131.

of iron (SKRAUP), 1876, i., 377; 1877, ii., 597.

purple colouring matter derived from (BONG), 1875, 565.

estimation of, in soda-lyes (HURTER), 1879, A., 402.

**Cyanogen bromide**, action of, on methyl sulphide (CAHOERS), 1876, i., 696.

action of sodium ethoxide on (MULDER), 1882, A., 590.

chloride, danger of preparing (WEITH), 1875, 1183.

action of, on cumyl alcohol (SPICA), 1876, i., 582.

**Cyanogen iodide**, action of, on amides (HÜBNER), 1876, ii., 310; 1878, A., 143.

sulphide, detection of, in saliva (BÖTTGER), 1873, 536.

disulphide (ATKINSON), 1880, T., 232.

**Hydrocyanic acid** (*cyanhydric acid*; *hydrogen cyanide*; *prussic acid*; *formonitrite*) (BERTHELOT), 1879, A., 909.

from cassava (FRANCIS), 1877, ii., 515.

anhydrous (LESCOUR and RIGAUT), 1879, A., 1028.

formation of (ALMÉN), 1873, 93.

formation of, in the electric arc (DEWAR), 1880, A., 23.

heat of combustion of (BERTHELOT), 1881, A., 8.

heats of combustion and formation of (BERTHELOT), 1880, A., 839; (THOMSEN), 1880, A., 840.

anhydrous, spontaneous alteration of, and a new case of the complete transformation of that acid (DE GIRARD), 1877, i., 66.

mode of action of (WALLACH), 1878, A., 285.

action of, upon diacetanamine chloride (HEINTZ), 1877, ii., 878.

action of, on diazo-compounds (GABRIEL), 1880, A., 41.

anhydrous, action of, on ethylic acetoacetate (MORRIS), 1880, T., 6.

action of haloid acids on (CLAISEN and MATTHEWS), 1882, T., 264.

action of hydrochloric acid and alcohol on (PINNEN and KLEIN), 1879, A., 46.

action of, on pyruvic acid (BÖRTINGER), 1877, i., 455.

nitriles from acetaldehydeammonia and (ERLENMEYER and PASSAVANT), 1880, A., 313.

new sulphur-derivative of (WALLACH), 1874, 1086.

**Cyanides**, liquid, in blast furnaces (ANON.), 1879, A., 989.

simple method of preparing metallic (ERLENMEYER), 1877, i., 591.

heats of combustion and formation of (BERTHELOT), 1880, A., 839; (THOMSEN), 1880, A., 840.

of negative radicals, volatility of (HENRY), 1873, 1129.

decomposition of (VAN DER BURG), 1882, A., 102.

organic, decomposition of (CLAUS), 1878, A., 855.



- Cyanides**, action of calcium hypochlorite on soluble, simple and double (ZINNO), 1876, i., 377.  
aromatic, convertibility of thiocarbonylides and (WEITZ), 1873, 908.
- Hydrocyanic acid**, detection and estimation of:—  
detection of (ALMÉN), 1873, 93; (v. STRUVE), 1873, 1168; (SELMÉ), 1874, 608; (RENNARD), 1874, 715; (LEA), 1876, i., 112; (LUDWIG and MAUTHNER), 1881, A., 1175.  
delicacy of some tests for (LINK and MÜCKEL), 1879, A., 403.  
behaviour of chlorides, bromides and iodides, and of ammonia to the guaiacum-copper test for (SCHÄR), 1874, 922.  
detection of, in cases of poisoning (ALMÉN), 1873, 193.  
detection of poisoning by, after a long time (REICHARDT), 1882, A., 246.  
estimation of (HANNAY), 1878, T., 245; (VOLHARD), 1878, A., 749.  
titration of, and its relation to alkalimetry (SIEBOLD), 1879, A., 486.  
estimation of, in bitter almond water (KOSTER), 1874, 94; (VIELHABER), 1879, A., 280.  
estimation of, in the dead body (SOKOLOFF), 1877, ii., 365.
- Trihydrocyanic acid** (*tricyanhydric acid*) (LANGE), 1873, 628; (WIPPERMANN), 1874, 1084; (LESCEUR and RIGAUT), 1879, A., 1028.
- n-Cyanic acid** (N: C.OH), and its derivatives (MULDER), 1882, A., 590.  
constitution of (MICHLER), 1876, ii., 288.  
structure of (CLAUS), 1876, ii., 288; 1877, i., 67; (FLEISCHER), 1877, i., 299.  
compounds (FLEISCHER), 1876, ii., 73, 509.  
thio-. See Thiocyanic acid.
- Cyanogen-groups**, introduction of, into organic compounds (CLAUS), 1878, A., 855.
- Cyanoguanidines** (LANDGREBE), 1878, A., 216; 1879, A., 53.
- Cyanomalonyluric acid** (NENCKI), 1873, 282.
- Cyanomelamidine** (BYK), 1879, A., 614; 1880, A., 311.
- $\alpha$ -Cyanonaphthalene**. See  $\alpha$ -Naphtho-nitrile.
- di*Cyanonaphthalene**, 2:2'- and 2:3'- (EBERT and MERZ), 1876, ii., 409.
- "Cyanone"** (THOMPSON), 1878, A., 405.
- di*Cyanophenylditolylguanidine** (LANDGREBE), 1878, A., 216; 1879, A., 53.
- Cyanophenylic alcohol**. See Hydroxybenzonitrile.
- iso*Cyanophenylic chloride**. See Phenyl-carblylamine dichloride.
- Cyanopropionic acid**, and its salts (WANKLYN and COOPER), 1880, A., 460.
- Cyanoquinolines** (BEDALL and FISCHER), 1882, A., 869.
- di*Cyanostilbene**, and its reduction (REIMER), 1881, A., 48.
- di*Cyano- $\alpha$ - and - $\beta$ -triphenylguanidine** (LANDGREBE), 1878, A., 217; 1879, A., 53.
- $\alpha$ -*di*Cyanotri-*o*-tolylguanidine** (BERGER), 1880, A., 244.
- di*Cyanotritolylguanidines** (LANDGREBE), 1878, A., 216; 1879, A., 53.
- Cyanotypes** (EDER), 1882, A., 113.
- Cyanphenine**. See Cyaphenine.
- Cyanuracetic acid**, thio- (CLAËSSON), 1881, A., 715.
- Cyanuric acid**, constitution of (NENCKI), 1876, ii., 191, 509; 1877, i., 299; (CLAUS), 1876, ii., 288; 1877, i., 67; (HARTLEY), 1882, T., 48.
- Cyanuric acids**,  $\alpha$ - and  $\beta$ - (HERZIG), 1879, A., 517.
- Cyanuric bromide** (MERZ and EZWEILER), 1879, A., 702.
- "Cyanuromalic acid"** (NENCKI), 1873, 282.
- Cyaphenine** (*cyaphenine*) (PINNER and KLEIN), 1878, A., 491, 864; (FRANKLAND and EVANS), 1880, T., 563.  
formula of (RADZISZEWSKI), 1882, A., 1064.
- Cyclamen** (DE LUCA), 1873, 764.
- Cyclamin** (MUTSCHLER), 1877, ii., 903.  
splitting up of, into glucose and mannitol (DE LUCA), 1879, A., 70.
- Cyclamiretin** (MUTSCHLER), 1877, ii., 904; (FLÜCKIGER), 1878, A., 328.
- Cyclopia Vogelii***. See Cape-tea.
- Cyclopia-red** and **cyclopin** (GREENISH), 1881, A., 442.
- Cyclopic acid** (*cyclopiafluorescin*) (GREENISH), 1881, A., 442; (CHURCH), 1881, A., 443.
- Cyclopite** from Etna (v. LASAULX), 1882, A., 284.
- Cylinders**, Schlumberger's electroplated cast-iron, for calico-printing (SCHAEFFER), 1875, 196.
- Cymatolite** from Goschen, Mass., composition of (JULIEN), 1880, A., 225.

**Cymene** (*methylisopropylbenzene*)  
 (WRIGHT), 1873, 689; (FITICA), 1873, 1227; 1875, 59.  
 from amylene and valerylene (BOUCHARLAT), 1880, A., 710.  
 from camphor and from oil of turpentine, identity of (PATERNÒ), 1874, 687.  
 from camphor, ptychotis oil, and thymol (FITICA), 1873, 1227; 1875, 59.  
 from cumin oil (WRIGHT), 1873, 694; (BEILSTEIN and KUPFFER), 1874, 152; (GUARESCHI), 1874, 684.  
 from cumyl alcohol (KRAUT), 1878, A., 973; (PATERNÒ and SPICA), 1880, A., 106.  
 from nutmeg oil (WRIGHT), 1873, 551, 690.  
 from *n*-propyl bromide and crystallisable bromotoluene (FITICA), 1874, 684.  
 from *Ptychotis Ajouran* (FITICA), 1873, 1227; 1875, 59.  
 from terpenes (KEKULÉ), 1873, 889; (FAUST and HOMEYER), 1875, 371; (BRUYLANTS), 1878, A., 158; (BRUÈRE), 1881, A., 39; (NAUDIN), 1882, A., 608.  
 an examination of terpenes for, by means of the ultra-violet spectrum (HARTLEY), 1880, T., 676.  
 from the oils of wormwood and citronella (WRIGHT), 1874, 2, 318.  
 from various sources (WRIGHT), 1873, 686; (BECKETT and WRIGHT), 1876, i., 4.  
 optically considered (GLADSTONE), 1873, 970.  
 constitution of (PATERNÒ), 1879, A., 308.  
 constitution of the propyl group in (JACOBSEN), 1879, A., 228.  
 specific gravity, refractive index and dispersion of (WRIGHT), 1873, 699.  
 specific gravity of (PISATI and PATERNÒ), 1874, 686.  
 boiling point of (WRIGHT), 1873, 696.  
 action of bromine on (GUSTAVSON), 1878, A., 49.  
 action of bromine and chlorine on (KELBE), 1882, A., 301.  
 action of chlorine on (v. GERICHTEN), 1878, A., 49.  
 ultimate action of chlorine on (KRAFFT and MERZ), 1876, i., 540.  
 action of chromyl dichloride on (ETARD), 1879, A., 321; 1881, A., 582.

**Cymene** (*methylisopropylbenzene*),  
 action of chromic liquor on (WRIGHT), 1873, 696.  
 action of iodine on (PREIS and RAÏMAN), 1879, A., 623; 1880, A., 463.  
 action of nitrogen peroxide on (LEEDS), 1881, A., 584.  
 oxidation of, by air (KINGZETT), 1875, 210; 1876, i., 243.  
 oxidation products of (WRIGHT), 1874, 323.  
 action of, on the animal organism (ZIEGLER), 1874, 594.  
 behaviour of, in the animal organism (JACOBSEN), 1880, A., 38.  
 compounds of, with aluminium bromide and chloride (GUSTAVSON), 1879, A., 785.  
 analysis of, by means of platinum (KOPFER), 1876, i., 664; 1877, i., 228.  
**Cymene**, bromo-, reactions of (PATERNÒ and COLOMBO), 1878, A., 139.  
 3:5-dibromo-, oxidation of (CLAUS and WIMMEL), 1880, A., 632.  
 2-bromodinitro- (v. GERICHTEN), 1878, A., 787.  
 2-chloro- (v. GERICHTEN), 1878, A., 49.  
 3-chloro-, from thymol (v. GERICHTEN), 1878, A., 570; 1879, A., 230.  
 action of nitric acid on (v. GERICHTEN), 1878, A., 787.  
 $\omega$ -chloro- (*cumyl chloride*) (PATERNÒ and SPICA), 1880, A., 107.  
 dichloro- (v. GERICHTEN), 1878, A., 49.  
 chlorodinitro- (LADENBURG and ENGELBRECHT), 1878, A., 60.  
 2-chlorodinitro- (v. GERICHTEN), 1878, A., 787.  
 $\omega$ -dichloro-3-nitro- (WIDMAN), 1882, A., 727.  
 so-called solid nitro- (v. GERICHTEN), 1878, A., 787.  
 nitro-, action of chlorosulphonic acid on (LEONE), 1882, A., 722.  
 2-nitro- (LANDOLPH), 1873, 1227.  
 dinitro- (ROMMIER), 1873, 887.  
 thio- (RODERBURG), 1873, 1030; (FITICA), 1875, 59.  
*o*-Cymene (*o*-propyltoluene) (CLAUS and HANSEN), 1880, A., 631.  
*m*-Cymene (*m*-propyltoluene) (CLAUS and STÜSSER), 1880, A., 632.  
*m*-isoCymene (*m*-methylisopropylbenzene) (KELBE), 1882, A., 299.  
 from light resin oil (KELBE), 1880, A., 878; (ARMSTRONG and TILDEN), 1881, A., 40.

- m*-**isoCymene** (*m*-methylisopropylbenzene), synthesis of (ZIEGLER and KELBE), 1880, A., 877.
- m*-**isoCymene**,  $\alpha$ - and  $\beta$ -bromo-, 6-bromo-nitro- and 4-bromodinitro- (KELBE), 1882, A., 618.
- tr*-nitro- (KELBE), 1882, A., 301.
- p*-**isoCymene** (*p*-methylcumene) (JACOBSEN), 1879, A., 624.
- Cymenecarboxylic acid** (PATERNO and SPICA), 1880, A., 163.
- Cymenedisulphonic acid**, nitro-, and some of its salts (LEONE), 1882, A., 722.
- Cymenesulphinic acid** (BERGER), 1877, ii., 601.
- Cymene-2-sulphonamide** (BERGER), 1877, ii., 601; (PATERNO and SPICA), 1880, A., 107.
- oxidation-products of (HALL and REMSEN), 1880, A., 257.
- Cymene-3-sulphonamide**, 6-bromo- (PATERNO and CANZONERI), 1881, A., 594.
- Cymenesulphonic acid**, new (FITTICA), 1875, 265.
- Cymene-2-sulphonic acid** (JACOBSEN), 1878, A., 731.
- Cymene-3-sulphonic acid**, 6-bromo-, and its salts (PATERNO and CANZONERI), 1881, A., 594.
- Cymene-2- and -3-sulphonic acids**, and their salts (CLAUS and CRATZ), 1880, A., 632; (SPICA), 1880, A., 890; 1881, A., 602; (CLAUS), 1881, A., 174; 1882, A., 196.
- Cymenesulphonic acids**, bromo- (PATERNO and COLOMBO), 1878, A., 139.
- o*-**Cymenesulphonic acids** and their amides and salts (CLAUS and HANSEN), 1880, A., 631.
- m*-**Cymenesulphonic acids** and their amides and salts (CLAUS and STÜSSER), 1880, A., 632.
- m*-**isoCymene-6-sulphonic acid**, 4-bromo-, and its lead salt (KELBE), 1882, A., 300.
- m*-**isoCymenesulphonic acids** and their salts (KELBE), 1880, A., 878; 1882, A., 300.
- p*-**isoCymenesulphonic acid**, oxidation of (MEYER and BONER), 1881, A., 818.
- p*-**isoCymenesulphonic acids** (JACOBSEN), 1879, A., 624.
- Cymene-3-sulphonic chloride**, 6-bromo- (PATERNO and CANZONERI), 1881, A., 594.
- m*-**Cymene- $\alpha$ -sulphonic chloride** (CLAUS and STÜSSER), 1880, A., 632.
- Cymenol**. See Carvacrol.
- a*-**m**-**isoCymenol** (*methylisopropylphenol*, *isocymophenol*) (KELBE), 1882, A., 300.
- Cymidine**, and its salts (WIDMAN), 1882, A., 728.
- Cymyl mercaptan**. See Thiocarvacrol.
- Cymylene chloride**, nitro-. See Cymene, *o*-dichloronitro-.
- Cymylphosphinic acid** (MICHAELIS and PANKE), 1882, A., 964.
- Cynanchin** and **cynanchocerin** (HESSE), 1878, A., 800.
- Cynanchol** (BUTLEROFF), 1876, ii., 102; (HESSE), 1876, ii., 641; 1878, A., 800.
- Cynanchum acutum*, 'milky juice of (BUTLEROFF), 1876, ii., 102.
- Cyprusite**, a new mineral (REINSCH), 1882, A., 578.
- Cyrtolite** from Ytterby (V. NORDENSKIÖLD), 1878, A., 279.
- Cystin** (DEWAR), 1873, 74.
- constitution of (BAUMANN and PREUSSE), 1882, A., 758.
- rotatory power of (KÜLZ; MAUTHNER), 1882, A., 1206.
- and its bromo-derivative (BAUMANN), 1882, A., 1282.
- Cystinuria** (LOEBISCH), 1877, i., 101; (NIEMANN), 1877, ii., 793.
- Cytoblast**, chemical nature of (ZACHARIAS), 1882, A., 422.

## D.

- Dactylis glomerata* (Cock's foot grass), cultivation of, in Saxony (NOBBE), 1882, A., 422.
- "**Dahlia**" (*ethylated mauveine*) (PERKIN), 1879, T., 721.
- Dairy**. See under Agricultural Chemistry.
- Damiana**, composition of (PARSONS), 1881, A., 106.
- Dammarol** (RENNIE), 1881, T., 240.
- Dampness** of the walls of houses and its estimation (GLÄSSGEN), 1875, 286.
- Danburite**, crystallised, from Danbury (DES CLOIZEAUX), 1882, A., 151.
- from Russell (BRUSH and DANA), 1882, A., 150; (SMITH), 1882, A., 151.
- Dandelion**, composition of (STORER and LEWIS), 1879, A., 821.
- Daphnetin** (STÜNKEL), 1879, A., 469.
- Dari**, composition of (LEEUW), 1882, A., 1224.
- Date-palm**, sugar from (HORSIN-DÉON), 1880, A., 100.
- Datolite** (SCHMID), 1882, A., 582.
- from Theiss in Tyrol (VRBA), 1882, A., 574.

- Datolite**, optical and thermal properties of (BODEWIG), 1877, ii., 170.  
garnet and idocrase, association of (SMITH), 1875, 136.
- Datura**, alkaloid from (BRETET), 1880, A., 425.
- Datura Stramonium**, alkaloids from (LADENBURG), 1880, A., 561; (SCHMIDT), 1881, A., 293.  
chemico-legal examination of (WASILEWSKY), 1877, ii., 934.
- Daturine**. See under Alkaloids.
- Daubr  elite**, a new mineral (SMITH), 1879, A., 33; 1881, A., 705.
- Daubreite**, a new mineral (DOMEYKO), 1876, ii., 180.  
See also Bismuth oxychloride.
- Davyne** (*microsommit  *) (VOM RATH), 1874, 30.  
chemical composition of (RAUFF), 1879, A., 606.
- Davyum** (KERN), 1877, ii., 278, 712.
- Dawsonite** (HARRINGTON), 1875, 617.
- Daylight**. See under Photochemistry.
- Dead Sea**, existence of lithium and boric acid in notable quantities in the (DIEULAFAIT), 1882, A., 1037.
- Decane** (*disoamyl*; *disopentyl*) and the formation of its acetates and alcohols (GRIMSHAW), 1877, ii., 260, 687.  
chlorination of (GRIMSHAW), 1877, ii., 261.
- Decarbusnic acid** and decarbusnein (PATERN  ), 1882, A., 1079.
- Decenoic acid** (*amyloxylenic acid*) (HELL and SCHOOP), 1879, A., 521.
- Decenylic alcohol** (*dipropylallylcarbinol*), preparation of (A. and P. SAYTZEFF), 1879, A., 136.  
action of dilute sulphuric acid on (A. and P. SAYTZEFF and NIKOLSKY), 1879, A., 214; (SAYTZEFF), 1879, A., 447.  
heat of combustion of (LUGININ), 1881, A., 871.
- Decinene** (*decine*) (RENARD), 1882, A., 738, 1301.  
(*rutylene*) (HARTWIG), 1881, A., 795.
- Decinyl alcohol** (*isopropylallylcarbinol*) (RJABININ and SAYTZEFF), 1879, A., 612.
- Decipium**, a new metal from samarskite (DELAFONTAINE), 1879, A., 117; 1881, A., 979.  
absorption spectrum of (SORET) 1881, A., 349.
- Decoic acid** (*capric acid*; *octylacetic acid*) (GUTZKEIT), 1880, A., 871.  
*dibromo-* (HELL and SCHOOP), 1879, A., 521.
- Decomposition**, influence of chloroform in preventing (WARINGTON), 1878, T. 46, 49; (SCHLESING and MUNTZ), 1878, A., 163; (HEHNER), 1879, A., 395.  
See also Putrefaction.  
chemical. See Affinity.
- Decononylcarbamide** (*nonyldecoylcarbamide*) (V. HOFMANN), 1882, A., 1053.
- Decylene** (*diamylene*) (LEBEDEFF), 1876, i., 894.  
thermal constants of (BERTHELOT), 1879, A., 874.  
hydrocarbon,  $C_{10}H_{16}$ , from (TUGOLESSOFF), 1880, A., 231.
- Dehydracetic acid**, preparation and properties of (OPPENHEIM and PRECHT), 1876, ii., 69.  
derivatives of (OPPENHEIM and PRECHT), 1876, ii., 506.
- Dehydromacphor** (SCHIFF), 1882, A., 527.
- Dehydrocholic acid** (HAMMARSTEN), 1881, A., 624.
- Dehydrodiacetanamine** (HEINTZ), 1877, i., 592.
- Dehydromucamide** (KLINKHARDT), 1882, A., 498.
- Dehydromucic acid** and its salts and derivatives (HEINZELMANN), 1879, A., 141; (SEELIG), 1879, A., 783; (KLINKHARDT), 1882, A., 498.  
action of sodium-amalgam on, and two new acids from (SEELIG), 1879, A., 783.
- Dehydromucic chloride** (KLINKHARDT), 1882, A., 498.
- Dehydropentacetanamine** (HEINTZ), 1876, ii., 292.
- Dehydrotriacetanamine** (HEINTZ), 1874, 1080; 1875, 351; 1877, i., 591.  
composition of the platinum compound of (HEINTZ), 1875, 885.  
(*acetonic*)trithiocarbonate (MULDER), 1874, 47.
- Dekamali resin** (FL  CKIGER), 1877, ii., 501.  
gardenin and a terpene from (STENHOUSE and GROVES), 1879, T., 688.
- Delphinine**, absorption spectra of solutions of (HOCK), 1882, A., 349.  
test for (TATTERSALL), 1880, A., 763.
- Delvauxite**. See Dufrenite.
- Demantoid** from the Urals, composition of (WALLER), 1881, A., 697.
- Densimeter**, new (PAQUET), 1876, i., 37.
- Density** of certain acetates (SCHR  DER), 1881, A., 969.  
of bromine (THORPE), 1880, T., 172.



- Density** of bromine at high temperatures (CRAFTS; MEYER and ZÜBLIN), 1880, A., 432.  
 of chlorine at high temperatures (BRODIE), 1879, T., 676; (LIEBEN), 1879, A., 1011; (CRAFTS; MEYER and ZÜBLIN), 1880, A., 432.  
 and refractive power, chemical constitution of organic compounds in relation to their (BRÜHL), 1880, A., 295, 781; 1881, A., 489.  
 and elasticity of gas, relation between the variations at pressures less than one atmosphere (SILJESTRÖM), 1875, 38.  
 of some gases at a high temperature (CRAFTS), 1880, A., 434.  
 and molecular weight of gases, relation between (NAUMANN), 1880, A., 525.  
 of permanent gases, determination of the (MEYER), 1881, A., 137; (MEYER and GOLDSCHMIDT), 1882, A., 771, 1159.  
 of iodine at high temperatures (CRAFTS), 1880, A., 432; (MEYER), 1880, A., 433, 696, 788; (CRAFTS and MEYER), 1880, A., 433, 606; 1881, A., 221; (TROOST), 1880, A., 695.  
 of nitrogen peroxide (TROOST), 1878, A., 365; (BRODIE), 1879, T., 677; (NAUMANN), 1879, A., 195.  
 of nitrous oxide (v. DUMREICHER), 1882, A., 362.  
 of the vapour of pyrosulphuryl chloride (OGIER), 1882, A., 694.  
 of vapours which attack porcelain at a red heat, estimation of (MEYER and ZÜBLIN), 1880, A., 149.  
 See also Specific gravity and Vapour density.  
**Deoxalic acid** (BRUNNER), 1879, A., 619; (KLEIN), 1880, A., 36.  
**Deoxidation** (WRIGHT, RENNIE, and MENKE), 1880, T., 757.  
**Deoxylizarin** (ROEMER), 1881, A., 823.  
**Deoxyisocanthraflavic acid** (ROEMER and SCHWARZER), 1882, A., 975.  
**Deoxybenzoin** (*phenyl benzyl ketone*) (ZAGUMENNY), 1873, 502; (RADZISZEWSKI), 1873, 1037; 1875, 1190; (ZININ), 1878, A., 152.  
 synthesis of (GRAEBE and BUNGENER), 1879, A., 790.  
 action of nitric acid on (GOLUBEFF), 1879, A., 150; (BORODIN), 1881, A., 813.  
 derivatives of (ZAGUMENNY), 1877, ii., 194.  
 homologues of (SÖLLSCHER), 1882, A., 1292.  
**Deoxybenzoin**, amido-, and its platinum-chloride (GOLUBEFF), 1879, A., 150, 791.  
 nitro- (GOLUBEFF), 1879, A., 790.  
 isomeric dinitro- (GOLUBEFF), 1881, A., 422.  
**o-Deoxybenzoincarbonic acid**. See Phenylbenzylketone-o-carboxylic acid.  
**Deoxycuminoin** (BÜSLER), 1881, A., 421.  
**Deoxymido-mono- and -di-isatin** (v. SOMMARUGA), 1878, A., 799; 1879, A., 63.  
**Dephlegmator**, distillation with (BROWN), 1880, T., 50.  
**Depilatory** (BÖTTGER), 1873, 308; 1874, 728.  
**Descloizite** (SILLIMAN), 1881, A., 1108.  
 composition of (RAMMELSBERG), 1882, A., 150.  
 composition and crystalline form of (WEBSKY), 1881, A., 1001.  
 and vanadinite (FRENZEL), 1876, i., 49.  
**Desmine**. See Stilbite.  
**Detonating agents**, history of (ROUX and SARRAU), 1874, 119; 1875, 126; (ABEL), 1874, 536; 1879, A., 846.  
 various vibratory motions produced by (CHAMPION and PELLET), 1873, 31.  
**Detonating gas**, apparatus for the safe evolution and combustion of (GAWALOWSKI), 1875, 39.  
**Detonation** and the production of an explosive wave (BERTHELOT and VIEILLE), 1882, A., 1261.  
 suddenness of, as compared with explosion (ABEL), 1879, A., 847.  
 See also Explosion.  
**Developers** for photography. See under Photochemistry.  
**Devitrofication** (GRÖGER), 1882, A., 343.  
**Dew**, amount of, on plants (HAMPEL), 1880, A., 493.  
**Dextran** (BUNGE), 1879, A., 912; (VAN TIEGHEM), 1880, A., 908; (BÉCHAMP), 1881, A., 1024.  
**Dextrin**. See under Carbohydrates.  
**Dextrose**. See under Carbohydrates.  
**Dextrochloridetetrasulphuric acid** (CLAËSSON), 1879, A., 1034; 1880, A., 28.  
**Dextrose-tri- and -tetra-sulphuric acids** and their salts (CLAËSSON), 1879, A., 1034.  
**Diabantite**, a chlorite occurring in the trap of the Connecticut Valley (HAWES), 1876, i., 348.

- Diabase** (SENFTER), 1873, 736.  
 from Berneck (KNOP), 1879, A., 443, 824.  
 of the Buchan district (HOWITT), 1882, A., 584.  
 from S. Durham Mountain (HAWES), 1876, i., 351.  
 peridotiferous, of Mosso, in the Biellese (COSSA), 1881, A., 388.
- Diabetes**, influence of muscular work on the elimination of sugar and urea in (OPPENHEIM), 1882, A., 755.
- Diabetes mellitus*, chemistry of (KINGZETT), 1876, ii., 319.
- Diacetamide** (v. HOFMANN), 1882, A., 822.
- $\beta$ -Diacetamidobenzophenone** (STAEDEL and PRAETORIUS), 1879, A., 319.
- Diacetamidofluorene** (SCHULTZ), 1880, A., 814.
- Diacetamidomesitylene**, preparation of (LADENBURG), 1876, i., 386.
- Diacetanilide**, 2:4:6-tribromo-3-nitro- (REMMERS), 1874, 696.
- Diacethydroxamic acid** (*diacethydroxylamine*) (KISSEL), 1882, A., 375.
- Diacetochrysoidine** (WITT), 1877, ii., 458.
- Diacetocyanamide** (MERTENS), 1878, A., 396.
- s-Diacetodiphenylhydrazide** (*diacetylhydrazobenzene*) (SCHMIDT and SCHULTZ), 1879, A., 630; 1881, A., 909.
- Diacetonalkamine**, formation of, and its salts (HEINTZ), 1877, i., 592.
- Diacetonamine** (HEINTZ), 1874, 1080; 1875, 351.  
 regeneration of, from triacetonamine, and the formation of a fifth acetone base (HEINTZ), 1876, ii., 292.  
 action of heat on (HEINTZ), 1875, 566.  
 products of oxidation of (HEINTZ), 1880, A., 101.  
 alcohol bases formed by the hydrogenisation of (HEINTZ), 1877, i., 592.
- Diacetonamine chloride**, action of hydrocyanic acid on (HEINTZ), 1877, ii., 878.
- Diacetonecyanhydrin** (URECH), 1873, 59.
- Diacetonic alcohol**. See Acetylbutylic alcohol.
- Diacetophenylenediamine**, nitro- (BARBAGLIA), 1875, 273.
- Diaceto-2:4-tolylenediamine** and its nitro-derivative (LADENBURG), 1876, i., 401.
- $\alpha$ -Diacetoxanthracene** (LIEBERMANN), 1879, A., 537.
- $\beta$ -Diacetoxanthracene** (LIEBERMANN and BOECK), 1879, A., 258.
- Diacetoxybenzenes**. See Diacetylquinol and Diacetylnesorcinol.
- $\alpha$ -Diacetoxybenzophenone** (STAEDEL and GAIL), 1879, A., 326.
- 1:4-Diacetoxy-mono- and -di-chlorobenzene**. See Diacetylquinol, chloro-.
- Diacetoxydicymylethane** (STEINER), 1878, A., 507.
- p-Diacetoxydiphenylmethane** (STAEDEL and BECK), 1879, A., 325.
- Diacetoxydiphenylphthalide** (v. PECHMANN), 1882, A., 184.
- 2:2'-Diacetoxynaphthalene** (WEBER), 1882, A., 205.
- Diacetoxy-d-tartaric anhydride** (ANSCHÜTZ and PICTET; ANSCHÜTZ), 1880, A., 876.
- Diacetyl- $\alpha$ - $\psi$ -aconine** (WRIGHT and LUFF), 1878, T., 330.
- Diacetylæsculetin**. See under Glucosides.
- Diacetylalazarin** (PERKIN), 1873, 21.  
 preparation of (PERKIN), 1876, ii., 578.  
 colouring matter obtained from, by the action of nitric acid (PERKIN), 1873, 430.  
 bromo- (PERKIN), 1874, 402.
- Diacetylalkannin** (CARNELUTTI and NASINI), 1881, A., 53.
- Diacetyl-p-amidophenol** (LADENBURG), 1877, i., 305.
- Diacetylanthracene-blue** (AUERBACH), 1879, T., 804.
- Diacetylanthraflavic acid** (PERKIN), 1873, 21.
- Diacetylanthranilic acid** (BEDSON and KING), 1880, T., 756.
- Diacetylanthrarufin** (SCHUNCK and ROEMER), 1878, A., 984; (LIEBERMANN and BOECK), 1879, A., 258.
- Diacetylaurin** (ZULKOWSKI), 1881, A., 900.
- Diacetylisobenzoglycol** (RENARD), 1880, A., 802.
- Diacetyl-m-benzylic alcohol** (v. DEN VELDEN), 1877, ii., 339.
- Diacetylbromalazarin** (PERKIN), 1874, 402.
- Diacetyltetrabromophenol-phthalein**, -phthalidein, and -phthalin (v. BAeyer), 1880, A., 654.
- Diacetylcaffeic acid** (TIEMANN and NAGAI), 1878, A., 581.
- Diacetylamphoride** (JAHNS), 1882, A., 209.
- Diacetylcatechin**, and its derivatives (LIEBERMANN and TAUCHERT), 1881, A., 53.

- Diacetylchrysazin** (LIEBERMANN), 1877, i., 612; 1879, A., 538.
- Diacetylchrysazol** (LIEBERMANN), 1879, A., 537.
- Diacetyl-*o*-cresolphthalein** (FRAUDE), 1879, A., 634.
- Diacetyldecarbusnic acid** (PATERNO), 1882, A., 1079.
- op*-Diacetyldiphenol** (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 911.
- mp*-Diacetyldiphenol** (SCHMIDT and SCHULTZ), 1881, A., 909.
- Diacetylloxanthone** (SALZMANN and WICHELHAUS), 1878, A., 79.
- Diacetylflavopurpurin** (SCHUNCK and ROEMER), 1878, A., 322.
- Diacetylgardenic acid** (STENHOUSE and GROVES), 1879, T., 694.
- Diacetyl- $\alpha$ -homoprotocatechuic acid** (NAGAI), 1878, A., 579.
- Diacetylmesoaxalic acid** (PETRIEFF), 1878, A., 490.
- Diacetylmorphine**, isomeric, and their derivatives (BECKETT and WRIGHT), 1875, 315.
- $\alpha$ -Diacetylmorphine**, action of benzoic anhydride on (BECKETT and WRIGHT), 1875, 25.
- Diacetylresorcinol**, *csotribromo*- (CLAASSEN), 1878, A., 867.
- Diacetylphenanthraquinol** (GRAEBE), 1873, 894.
- Diacetylphenolphthalein** (v. BAEYER), 1877, i., 308; 1880, A., 653.
- Diacetylphenolphthalin** (v. BAEYER), 1880, A., 655.
- Diacetyl-*o*-phenylhydrazidecarboxylic acid** (FISCHER and RENOUF), 1882, A., 1068.
- Diacetylpolyporic acid** (STAHL-SCHMIDT), 1877, ii., 620.
- Diacetylpyroguaiacol** (WIESER), 1881, A., 812.
- Diacetylquercetin**, *csotetabromo*- (LIEBERMANN and HAMBURGER), 1879, A., 946.
- Diacetylquinol** (SARAUW), 1879, A., 718; (HESSE), 1880, A., 317.
- mono*- and 2:5-*di*-chloro-** (LEVY and SCHULTZ), 1880, A., 888; 1882, A., 509; (SCHULZ), 1882, A., 838.
- 2:5-*dinitro*-** (HESSE), 1880, A., 317.
- Diacetylquinol-phthaleinand-phthalin** (EKSTRAND), 1878, A., 675.
- Diacetylracemic anhydride** (ANSCHÜTZ and PICTET; ANSCHÜTZ), 1880, A., 876.
- Diacetylresorcinol** (NENCKI and SIEBER), 1881, A., 591.
- tribromo*-** (CLAASSEN), 1878, A., 867.
- Diacetyl-*as*-trimethyl-*tr*-amidobenzene** (WURSTER and SCHOBIG), 1880, A., 111.
- Diacetyltrioxycholesterin** (LATSCHINOFF), 1879, A., 135.
- Diacrylic acid** (WISLICENUS), 1875, 355.
- Diadochite** from the Védrin mine (DEWALQUE), 1881, A., 999.
- (phosphato-sulphate of iron), two varieties of, found in the coal mine at Psychagnard (Isère) (CARNOT), 1881, A., 999.
- Dialdane**, action of ammonia on (WURTZ), 1881, A., 246.
- new alcohol from (WURTZ), 1882, A., 489.
- Dialdehyde** (*dialdol*), some derivatives of (WURTZ), 1877, i., 588.
- tribromo*-** (SCHÜTZENBERGER), 1873, 487.
- Dialkyl-compounds** (HÜBNER), 1882, A., 505.
- Diallage** (*diallagite*) (TRIPPKE), 1879, A., 514.
- from Dun Mountain, near Nelson, New Zealand, composition of (HILGER), 1880, A., 856.
- composition of (COSSA), 1881, A., 537.
- olivine rock of Mohsdorf in Saxony (DATHE), 1876, ii., 388.
- Diallyl**. See Hexinene.
- chloro-**. See Hexinyl chloride.
- Diallylactic acid** (*octioic acid*) and its salts (WOLFF), 1878, A., 293; (REBOUL), 1879, A., 372.
- synthesis of (REBOUL), 1877, ii., 593.
- action of hydrobromic acid and of bromine on (HIELT), 1882, A., 946.
- Diallylacetone** (WOLFF), 1878, A., 293.
- Diallylcarbinol** (*heptynyl alcohol*) (KANONNIKOFF and SAYTZEFF; SAYTZEFF), 1876, i., 548.
- synthesis of (SAYTZEFF), 1877, ii., 297.
- oxidation of (SCHIROKOFF), 1880, A., 382.
- methylandethylethers of (RJABININ), 1880, A., 372; 1881, A., 404.
- Diallylene** (HENRY), 1879, A., 34.
- bromo-** (HENRY), 1881, A., 565.
- Diallylenyl**. See Dipropargyl.
- Diallylethylalkamine**. See Hydroxyethylallylamine.
- Diallylic tetrabromide, dibromo-**. See Hexane, *hexabromo*-.
- Diallylic oxide, dibromo-** (HENRY), 1873, 1123.
- Diallylideneammonium dithiocarbamate** (MULDER), 1874, 47.
- Diallylmalonic acid** (CONRAD and BISCHOFF), 1880, A., 628.

- Diallylmalonic acid**, a neutral bromide from (HJELT), 1881, A., 577.
- Diallyloxalic acid** (*hydroxyoxalinoic acid*) (SAYTZEFF), 1876, i., 697; 1877, ii., 738, 882.
- tetrabromo-* (SAYTZEFF), 1877, ii., 883.
- Diallyloxamide tetrabromide** (WALLACH and STRICKER), 1880, A., 547.
- Dialuric acid** (*oxymalonyluric*) (MENSCHUTKIN), 1876, i., 907; (GRIMAUX), 1879, A., 460.
- metallic derivatives of, composition of (MENSCHUTKIN), 1876, ii., 627.
- Dialyser**, gelatin jelly as (WOODCOCK), 1882, A., 663.
- Dialysis**, continuous apparatus for (LEBAIGUE), 1879, A., 347.
- Diamide**, *dicyan-*. See *diCyandiamide*.
- "Diamidohydrin,"** hydrochloride of (CLAUS), 1873, 1121.
- Diamines**, derivatives of (LADENBURG), 1875, 1036; 1876, i., 933.
- aromatic, action of phthalic anhydride on (BIEDERMANN), 1877, ii., 783.
- colouring matters from (LAUTH), 1876, ii., 520.
- homologous tertiary, obtained in the methylaniline manufacture (DOEBNER), 1879, A., 786.
- o-Diamines** and their isomerides, method for distinguishing between (LADENBURG), 1878, A., 571.
- Diamond** (v. BAUMHAUER), 1877, ii., 849.
- origin and formation of, in nature (GRIFFITHS), 1882, A., 1269.
- theory of the formation of the (HARTLEY), 1876, ii., 249.
- artificial formation of the (HANNAY), 1880, A., 707; 1881, A., 1019; 1882, A., 281; (MARSDEN), 1881, A., 682.
- refraction equivalent of the (GLADSTONE), 1881, A., 333.
- specific heat of the (WEBER), 1874, 224.
- behaviour of the, at high temperatures (ROSE), 1873, 1195; (v. SCHRÖTTER), 1874, 539.
- colours of the, in polarised light (JANNETTAZ), 1881, A., 357.
- crystallisation of the (SADEBECK), 1877, ii., 717.
- crystal of the (BAKER), 1880, T., 579.
- growth and twin development of crystals of the (HIRSCHWALD), 1878, A., 201.
- hemihedry of the (MARTIN), 1880, A., 854.
- See also Carbon.
- Diamond-bearing sand** from Du Toit's Pan, South Africa, composition and origin of (MEINIER; DANA), 1877, ii., 280; 1878, A., 201.
- Diamond fuchsine** (GINTL), 1873, 208.
- Diamond hardness**, production of, in graving tool steel and steel wire (SCHÜTZLEDER), 1873, 418.
- Diisoamyl**. See Decane.
- Diamyl ketone** (*caprone*) (LIEBEN and JANEČEK), 1877, ii., 880.
- oxidation of (HERCZ), 1877, ii., 425.
- Diamylamine**, and its salts (PLIMPTON), 1881, A., 34.
- preparation of (CUSTER), 1879, A., 914.
- Diamylamine**, active and inactive, and some of its salts (PLIMPTON), 1881, T., 333.
- Diisoamylbenzene** (AUSTIN), 1880, A., 107.
- Diisoamylcarbamide** (CUSTER), 1879, A., 913.
- Diisoamyl- $\alpha$ -carbopyrrolamide** (BELL), 1879, A., 525.
- Diisoamyl-dihydroxydiphenylsulphone** (*amylacrylsulphobenzide*) (ANNAHEIM), 1874, 797.
- Diamylene**. See Decylene.
- Diisoamylphosphine** (v. HOFMANN), 1873, 882.
- Diisoamylsulphone** (BECKMANN), 1879, A., 38.
- Dianilidochloroquinone** (NEUHÖFFER and SCHULTZ), 1878, A., 62.
- Dianilidodiphenylsulphone**, *dinitro-* (ANNAHEIM), 1874, 697.
- Dianisylbenzhydroxylamine** (LOSSEN), 1877, ii., 328.
- Dianisylcarbamide** (MÜHLHÄUSER), 1880, A., 641; 1882, A., 302.
- Dianisylhydroxylamine** (LOSSEN), 1874, 254; 1875, 634.
- Dianisylthiocarbamide** (MÜHLHÄUSER), 1880, A., 642; 1882, A., 302.
- Diaphragms**, passage of gases through liquid (EXNER), 1876, ii., 163.
- Diaspore** (*empholite*) from the Greiner (VOM RATH), 1881, A., 551.
- from Jordansmühl (KLIEN), 1879, A., 603.
- Diastase**. See Enzymes.
- Diastasisimetry** (ROBERTS), 1881, A., 1051.
- Diastatic ferment**. See Enzymes.
- "Diaterebates"** (WILLIAMS), 1874, 71.
- Diaterpenylic acid**, and its salts (KRAFFT), 1878, A., 28; (FITTIG and KRAFFT), 1882, A., 43.
- Diazo-compounds**. See under Azo-



- Dibenzamide** (*benzimidobenzoate*) (SCHAFER), 1874, 165; (BARTH and SENHOFER), 1876, ii., 417; (PINNER and KLEIN), 1878, A., 864.
- p-Dibenzamidophenol** (LADENBURG), 1877, i., 305.
- 2:4-Dibenzamidophenol** (STUCKENBERG), 1877, ii., 193.
- 2:6-Dibenzamidophenol** (STUCKENBERG), 1877, ii., 475.
- Dibenzamilides** (LOSANITSCH), 1873, 758; (HIGGIN), 1879, A., 716; 1882, T., 132.
- Dibenzanisylhydroxylamine** (LOSSEN), 1875, 634; 1877, ii., 328.
- Dibenzarsenious iodide and dibenzarsinic acid** (LA COSTE), 1881, A., 904.
- $\alpha$ -Dibenzethylhydroxylamine** (EISELER), 1875, 766.
- Dibenzethylhydroxylamines,  $\alpha$ - and  $\beta$ - ( $\alpha$ - and  $\beta$ -ethyl dibenzoylhydroxamate)** (GÜRKE), 1881, A., 584.
- Dibenzhydroxylamine** (*dibenzhydroxamic acid*) (LOSSEN), 1874, 254; (KISSEL), 1882, A., 375.  
crystalline form of (KLEIN), 1873, 584.
- Dibenzhydrilamine** (FRIEDEL and BALSOHN), 1881, A., 279.
- Dibenzimide-oxide.** See Benzimido-benzamide.
- Dibenzimidine** (*dibenzimidimide*) (PINNER and KLEIN), 1878, A., 491.
- Dibenzmethylhydroxylamine** (EISELER), 1875, 768.
- p-Dibenzodiphenylthiocarbamide** (DOEBNER and WEISS), 1882, A., 177; (DOEBNER), 1882, A., 508.
- Dibenzomethylenediamide** (*hipparaffin*) (HEPP and SPIESS), 1877, i., 314.  
formula of (SCHWARZ), 1879, A., 650.
- Dibenzo-*m*-phenylenediamide**, and its derivatives (RUHEMANN), 1882, A., 391.
- Dibenzophenylhydrazide** (FISCHER), 1875, 1035; 1878, A., 309.
- Dibenzoquinol.** See Dihydroxyphenylene diphenyl diketone.
- Dibenzoquinone dibenzoate.** See Dibenzoxypyrenylene diphenyl diketone.
- Dibenzoresorcinol.** See Dihydroxyphenylene diphenyl diketone.
- Dibenzotolylene-*m*-diamide**, and its derivatives (RUHEMANN), 1882, A., 392.
- Dibenzotolyldiazide** (FISCHER), 1875, 1035.
- $\beta$ -Dibenzoxanthracene** (LIEBERMANN and BOECK), 1879, A., 258.
- 2:3'-Dibenzoxanthraquinone** (PERKIN), 1873, 22.
- $\alpha$ -Dibenzoxybenzophenone** (STAEDEL and GAIL), 1879, A., 325.
- 1:3-Dibenzoxy-mono-, -di- and -tri-chlorobenzene** (REINHARD), 1878, A., 726.
- 1:4-Dibenzoxy-mono-, -tri- and -tetra-chlorobenzene** (LEVY and SCHULTZ), 1880, A., 888; 1882, A., 509.
- $\alpha$ -Dibenzoxydicymyl** ( *$\alpha$ -dibenzoyldithymol*) (DIANIN), 1882, A., 624.
- Dibenzoxycycmylethane** (STEINER), 1878, A., 507.
- Dibenzoyldiphenyl, dinitro-** (GOLDSTEIN), 1879, A., 148.
- Dibenzoyldiphenylethane** (FABINYI), 1878, A., 430.
- p-Dibenzoyldiphenylmethane** (BECK), 1879, A., 325.
- 2:2'-Dibenzoxynaphthalene** (WEBER), 1882, A., 205.
- Dibenzoxypyrenylene diphenyl diketone** (*dibenzoquinone dibenzoate*), preparation of (DOEBNER and WOLFF), 1879, A., 638.
- Dibenzoyl.** See Benzil.
- Dibenzoyl $\alpha$ po- $\psi$ -aconine** (WRIGHT and LUFF), 1878, A., 330.
- Dibenzoylanthraflavic acid** (PERKIN), 1873, 22.
- Dibenzoylbenzene.** See Phthalophenone.
- Dibenzoylcamphoride** (JAHNS), 1882, A., 209.
- Dibenzoyl-*o*-cresolphthalein** (FRAUDE), 1879, A., 635.
- Dibenzoyldaphnetin** (STÜNKEL), 1879, A., 469.
- Dibenzoyldimethyldiamidothymoquinone** (ZINCKE), 1881, A., 596.
- Dibenzoyldiphenyl** (WOLF), 1882, A., 62.
- Dibenzoyleupittonic acid** (v. HOFMANN), 1880, A., 165.
- Dibenzoyleuxanthone** (GRAEBE and EBRAED), 1882, A., 1301.
- Dibenzoylflavopurpurin** (SCHUNCK and ROEMER), 1878, A., 322.
- Dibenzoylfluorescein** (FISCHER), 1875, 159.
- Dibenzoylhydrocotone**, and *di*- and *tetra*-bromo- (v. JOBST and HESSE), 1880, A., 327.
- Dibenzoylmorphine** (WRIGHT and RENNIE), 1880, T., 609.
- Dibenzoyl-*o*-nitro- $\omega$ -amidophenetoil** (WEDDIGE), 1881, A., 1138.
- Dibenzoylpyroguaiacol** (WIESER), 1881, A., 813.
- Dibenzoylstilbene** (*oxylepiden*) (ZININ), 1873, 489.
- Dibenzoyl-*d*-tartaric anhydride** (ANSCHÜTZ and PICTET; ANSCHÜTZ), 1880, A., 876.

- Dibenzyl.** See *s*-Diphenylethane.  
ketone, oxidation of (POPOFF), 1873, 1037.  
*diselenide* (JACKSON), 1875, 154.  
*disulphodioxide*, *di-p*-chloro- (JACKSON and WHITE), 1881, A., 808.
- Dibenzylacetic acid** (SESEMANN), 1874, 69; 1875, 73; (MERZ and WEITH), 1877, ii., 617.
- Dibenzylamarine** (CLAUS and ELES), 1880, A., 882.
- Dibenzylamidodiphenylmethane** (MELDOLA), 1882, T., 200.
- Dibenzylamine** (SPICA), 1881, A., 262.  
*diamido-* and *di-p*-nitro- (STRAKOSCH), 1874, 78.  
*di-p*-bromo- (JACKSON and LOWERY), 1882, A., 170.  
*di-p*-chloro- and its salts (JACKSON and FIELD), 1881, A., 804.  
*di-p*-iodo- (MABERY and JACKSON), 1878, A., 422.
- Dibenzylcarbamide**, *s*- and *as*- (PATERNO and SPICA), 1876, i., 601.
- o*-Dibenzylcarboxylic acid.** See Diphenylethane-*o*-carboxylic acid.
- Dibenzylidcarbonide.** See Diphenylsuccinone.
- Dibenzylidcarboxylic acids.** See  $\alpha$ - and  $\beta$ -Diphenylsuccinic acids.
- Dibenzylidiphenyl** (WOLF), 1882, A., 62.
- Dibenzylidisulphonic acid.** See *s*-Diphenylethanedisulphonic acid.
- Dibenzylene dicyanide.** See Diphenylethane, *dicyano*-.
- Dibenzylglycollic acid** (*oxatolyllic acid*) and its derivatives (SPIEGEL), 1881, A., 173, 1036.  
nitrile of (SPIEGEL), 1881, A., 174.
- Dibenzylic sulphide**, action of methylic iodide on (CAHOURS), 1875, 1181.  
*p*-chloro- (JACKSON and WHITE), 1880, A., 879; 1881, A., 807.  
compound  $C_{14}H_{10}S_2$  produced by the dry distillation of (LIMPRICHT), 1873, 1032.
- Dibenzylic disulphide** (*sulphobenzene*) (KLINGER), 1882, A., 1058.
- Dibenzylideneacetone.** See Distyryl ketone.
- Dibenzylideneamidobenzoic acid**, and its salts (LADENBURG and RÜGHEIMER), 1879, A., 233.
- Dibenzylidene-*p*-phenylenediamine** (LADENBURG), 1878, A., 572.
- Dibenzylmethane**, and *dinitro*-, formation of (SESEMANN), 1875, 74.
- Dibenzylmethylthymol** (MAZZARA), 1882, A., 173.
- Dibenzylphenylenediamine** (STRAKOSCH), 1874, 80.
- as*-Dibenzylselenocarbamide** (SPICA), 1877, ii., 189.
- Dibenzylsulphone** (OTTO and LÜDERS), 1880, A., 811.  
*di-p*-chloro- (JACKSON and WHITE), 1881, A., 807.
- as*-Dibenzylthiocarbamide** (PATERNO and SPICA), 1876, i., 601.
- Dibenzylthymol** (MAZZARA), 1882, A., 172.
- Dibromhydrin.** See Glyceryl dibromhydrin.
- Diisobutol.** See Octylic alcohol.
- Diisobutyl.** See *iso*Octane.
- Diisobutyl ketone** (WILLIAMS), 1879, T., 180.
- Diisobutylamine** and nitroso- (LADENBURG), 1879, A., 703.
- Di-*tert*-.butylamine** (RUDNEFF), 1879, A., 141; 1880, A., 546.
- Diisobutylbenzene**, synthesis of (GOLD-SCHMIDT), 1882, A., 952.
- Diisobutylene.** See Octylene.
- Diisobutylorthoglyoxylamide** (PINNER and KLEIN), 1879, A., 47.
- Dibutyllic oxide** (LIEBEN and ROSSI), 1873, 367.
- Di-*sec*-.butylic oxide** (*sec. butyl ether*) (KESSEL), 1874, 676.
- Dibutyllic sulphides.** See Butylic sulphides.
- Dibutyllic sulphoxide** (GRABOWSKI), 1875, 629.
- Diisobutyllic sulphoxide** (BECKMANN), 1879, A., 37.
- Diisobutylketonedisulphonic acid**, sodium salt of (PINNER), 1882, A., 943.
- Dibutyllic acid** ( *$\alpha$ -hydroxyisobutyric anhydride*) (BALBIANO), 1879, A., 616; (BALBIANO and TESTA), 1880, A., 871.
- Diisobutylloxamide** from commercial trimethylamine (DUVILLIER and BUISINE), 1879, A., 912.
- Diisobutylpinacene** (ROHN), 1878, A., 486; (PURDIE), 1881, T., 468.
- Diisobutylsulphone** (BECKMANN), 1879, A., 38.
- Di-*tert*-.butylthiocarbamide** (RUDNEFF), 1879, A., 713; 1880, A., 548.
- Diisobutyramide** (v. HOFMANN), 1882, A., 950.
- Di-*n*- and -*iso*-butyryl dicyanides** (MORITZ), 1881, T., 13.
- Dibutyrylmorphine ethiodide** (BECKETT and WRIGHT), 1875, 322.
- Dicalcium phosphate.** See under Calcium.
- Dicamphylamine** (SCHIFF), 1880, A., 892.
- Dicarinols** (KOLBE), 1881, A., 82.

- "Dicarbonyldinaphthylene." See Dinaphthylene diketone.
- Dicarboxypyridenic acid. See Pyridine-2:5-dicarboxylic acid.
- Dicarbotetracarboxylic acid. See Ethylenetetracarboxylic acid.
- Di-*p*-carboxydiphenylarsinic acid. See Dibenzarsinic acid.
- Dicarboxylsulphocarbanilide. See Thiocarbonyldiamidodibenzoic acid.
- Dicetylacetic acid, and dicetylmalonic acid (GUTHZEIT), 1881, A., 409.
- Dichlorhydrin. See Glyceryl dichlorhydrin.
- Dichroic acid, bromo- (WEIDEL and GRUBER), 1877, ii., 778.
- "Dichromazin, bromo-" (WEIDEL and GRUBER), 1877, ii., 778.
- Dicinchonine and diconchinine (HESSE), 1878, A., 435.
- Diapocinchonine (HESSE), 1881, A., 617.
- Dicinnamhydroxamic acid, and its preparation (ROSTOSKI), 1876, i., 272.
- Dickinsonite (BRUSH and DANA), 1879, A., 891.
- Dicodeine, action of acetic anhydride on (BECKETT and WRIGHT), 1875, 312.
- Dicodethylene. See Ethylenedimorphine under Alkaloids.
- Diconchinine (*apodiquinicine*) (HESSE), 1878, A., 435.
- Diconic acid (HERGT), 1874, 457.
- Dicotoin (v. JOEST and HESSE), 1880, A., 326.
- "Dicymene" (DE MONTGOLFIER), 1878, A., 899.
- Didenlactamic acid. See Dipropionic acid,  $\alpha$ -imido-.
- "Diapodimorphine" (WRIGHT), 1873, 917.
- Didymiferous minerals, absorption-spectra of (COSSA), 1879, A., 697.
- scheelite, artificial production of (COSSA), 1879, A., 696.
- Didymium (FRERICHS), 1874, 1062; 1878, A., 934; (CLEVE), 1875, 340; 1882, A., 1165; (HILLEBRAND and NORTON), 1876, ii., 276.
- atomic weight of (MENDELÉEFF), 1873, 1004; (HILLEBRAND), 1877, i., 50; (RAMMELSBERG), 1877, i., 282.
- distribution of (COSSA), 1879, A., 695.
- from cerite, probable compound nature of (DELAFONTAINE), 1879, A., 119.
- in scheelite (HÖRNER), 1874, 345.
- specific heat of (HILLEBRAND), 1877, i., 50.
- Didymium salts (MARNAG), 1874, 25; (CLEVE), 1875, 340; (FRERICHS and SMITH), 1878, A., 647.
- Didymium chlorostannate (CLEVE), 1879, A., 601.
- double fluorides of (BRAUNER), 1882, T., 75.
- hydroxide, heat produced by neutralisation of (THOMSEN), 1874, 430.
- nitrate (FRERICHS), 1874, 1063.
- spectrum of (SMITH and LECOQ DE BOISBAUDRAN), 1879, A., 861.
- oxide, pure, preparation of (COSSA), 1879, A., 696.
- peroxide and anhydrous pentoxide (BRAUNER), 1882, T., 71.
- platinochlorides of (MARNAG), 1874, 25.
- sulphate (FRERICHS), 1874, 1063.
- tungstate (COSSA), 1879, A., 696; 1881, A., 225.
- separation of, from lanthanum (FRERICHS), 1874, 1062.
- Diehic acid, a new acid obtained from sugar (MAUMENÉ), 1878, A., 971.
- Dielectric. See under Electrochemistry.
- Dies, steel for the manufacture of (ROBERTS-AUSTEN), 1881, A., 856.
- Diethoxydiamidodiphenyl. See Diethoxybenzidine.
- 2:4-Diethoxybenzaldehyde (*diethylresorcyllaldehyde*) (TIEMANN and LEWY), 1878, A., 424.
- 2:5-Diethoxybenzaldehyde (*p*-diethoxysalicyllaldehyde), and nitro- (HANTZSCH), 1881, A., 167.
- 1:3-Diethoxybenzene (*resorcinol diethyl ether*) (BENDER), 1881, A., 48.
- action of nitrous acid on (ARONHEIM), 1879, A., 465.
- 1:4-Diethoxybenzene (*diethylquinol*), *esomono-* and *tri-nitro-*, and 2:3- and 2:5-*dinitro-* (NIETZKI), 1878, A., 866; 1879, A., 464.
- esotri-nitro-*, action of alcoholic ammonia on (NIETZKI), 1878, A., 867.
- Diethoxybenzidine (*diethoxydiamidodiphenyl*), and the action of alkalis on the salts of (MÖHLAU), 1879, A., 939.
- $\alpha$ -Diethoxybenzophenone (STAEDEL and BECK), 1879, A., 325; (STAEDEL and GAIL), 1879, A., 326.
- 4:4'-(*p*-)Diethoxybenzophenone (STAEDEL and BECK), 1878, A., 421.
- Diethoxydicymylethane (STEINER), 1878, A., 508.
- p*-Diethoxydiphenylmethane (STAEDEL and BECK), 1879, A., 325.

- Diethoxydiphenylsulphone, and *di*-bromo-, and *dinitro*- (ANNAHEIM), 1874, 797.
- Diethoxyethane, chloro-. See Acetal, chloro-.
- Diethoxymethylene (GREENE), 1880, A., 307.
- 2:2'-Diethoxynaphthalene (LIEBERMANN and HAGEN), 1882, A., 1212.
- p*-Diethoxysalicylaldehyde. See 2:5-Diethoxybenzaldehyde.
- Diethylacetic acid. See Hexoic acid.
- Diethylallylamine (RINNE), 1874, 50.
- Diethylallylcarbinol (*octenyl alcohol*) (SAYTZEFF and SCHIROKOFF), 1879, A., 214, 448.
- Diethylamidoacetic acid, ethohydroxide and ethochloride of (BRÜHL), 1875, 1020.
- Diethyl-*p*-amidobenzoic acid, and the action of diethylaniline on (MICHLER and GRADMANN), 1877, ii., 334.
- Diethylamidoethylic cinnamate (*cinnamyltriethylalkeine*) (LADENBURG), 1882, A., 1193.
- Diethyl-*o*-amidophenetoil, and its salts (FÖRSTER), 1880, A., 465.
- Diethylamine diethyloxamate (WALLACH), 1881, A., 718.
- platinocyanide (SCHOLZ), 1881, A., 707.
- Diethylaniline, action of, on the chloride of diethylamidobenzoic acid (MICHLER and GRADMANN), 1877, ii., 335.
- Diethylanilinesulphonic acid (SMYTH), 1875, 164.
- Diethylbenzamide (HALLMANN), 1876, ii., 418.
- p*-Diethylbenzene (BALSOHN), 1879, A., 785.
- action of chromyl *dichloride* on (ETARD), 1881, A., 582.
- p*-Diethylbenzenesulphonic acid (ASCHENBRANDT), 1879, A., 920.
- Diethylorthoisobutaldehyde. See *iso*-Butylal.
- Diethylcarbamic chloride and cyanide (WALLACH), 1881, A., 717.
- s*-Diethylcarbamide (v. ZOTTA), 1876, i., 569.
- Diethylcarbinol. See Amylic alcohol.
- Diethyl- $\alpha$ -carbopyrrolamide (BELL), 1879, A., 525.
- Diethylcinchonine (CLAUS and KEMPERDICK), 1881, A., 289.
- Diethylisocyanamide, conversion of cyanamide into (FILETI and SCHIFF), 1877, ii., 307.
- Diethyldiphenylethylene (*diethylstilbene*) (HEPP), 1875, 361.
- Di*- $\alpha$ -ethyldiphenylpropionic acid (BÖTTINGER), 1881, A., 1035.
- Diethylenediphenylenetetramine (MORLEY), 1880, A., 112.
- $\beta$ -Diethylethylenelactic acid. See  $\beta$ -Hydroxyheptoic acid.
- Diethyleuxanthone (GRAEBE and EBRARD), 1882, A., 1301.
- Diethylformamide and the action of phosphorus *pentachloride* on (WALLACH), 1881, A., 718.
- Diethylfumaramide, action of phosphorus *pentachloride* on (WALLACH and KAMENSKI), 1881, A., 285.
- Diethylorthoglyoxyamide (PINNER and KLEIN), 1879, A., 47; (GEUTHER), 1879, A., 220.
- as*-Diethylguanidine hydrochloride, and platinochloride (ERLENMEYER), 1882, A., 191.
- as*-Diethylhydrazine (FISCHER), 1876, i., 576; 1879, A., 450.
- Diethylic ethylic oxide. See Ethylic hexylic oxide.
- Diethylic oxide. See Ethyl ether.
- brominated (SCHÜTZENBERGER), 1873, 487.
- di*bromo- (WISLICENUS), 1878, A., 777.
- tetra*- and *octo*-bromo- (KESSEL), 1878, A., 128.
- as*-*dichloro*- (ABELJANZ), 1873, 154; (WISLICENUS), 1878, A., 777.
- dichloro*- (*ethylidenic oxychloride*) (LIEBEN), 1876, i., 58; (HANRIOT), 1881, A., 404; 1882, A., 590.
- action of ammonia on (HANRIOT), 1881, A., 404.
- action of chlorine on (ROTH), 1876, i., 364.
- action of zinc ethyl on (KESSEL), 1875, 554.
- tetrachloro*-, and its preparation (PATERNÒ and PISATI), 1873, 158.
- action of potassium cyanide and of alcoholic potash on (BUSCH), 1878, A., 487.
- derivatives of (PATERNÒ), 1878, A., 656.
- iodo- (BAUMSTARK), 1875, 140.
- Diethylic phenyldioxy carbonate. See Phenylene diethylic dicarbonate.
- oxidation products of (BECKMANN), 1879, A., 37.
- tetra*- and *penta*-sulphides (CLAËSSON), 1877, i., 585; ii., 296.
- sulphoxide, action of chlorine on (SPRING and WINSSINGER), 1882, A., 939.
- mono*- and *di*-thiocarbonate (SALOMON), 1873, 617, 1223; 1874, 362.
- Diethylideneammonium *dithiocarbamate* (MULDER), 1874, 47.



**Diethylidenelactamic acid.** See Di-propionic acid,  $\alpha$ -imido-.

**Diethylidenethiocarbamide,** ammonia compound of (NENCKI), 1874, 458.

**Diethylketine.** See Dimethyldiethylpyrazine.

**Diethylmaleic acid** (*xeronic acid*), Fittig's (ROSER), 1882, A., 1114.

**Diethylmalonamide,** action of phosphorus *pentachloride* on (WALLACH and KAMENSKI), 1881, A., 285.

**Diethylmalonic acid** (GUTHZEIT), 1882, A., 39.

**Diethylmethyl-.** See Methyl-diethyl-.

**Diethylnitropyrogallol** (WESELSKY and BENEDIKT), 1882, A., 54.

**Diethylloxamic acid,** its preparation and its chloride (WALLACH), 1881, A., 717.

*as*-**Diethylloxamide** (WALLACH), 1881, A., 717.

action of phosphorus *pentachloride* on (WALLACH and PIRATH), 1879, A., 784.

thio- (WALLACH and PIRATH), 1879, A., 784.

**Diethyl-phenetol and -phenol, o-amido-** (FÖRSTER), 1880, A., 464.

**Diethylphosphinoacetic acid** and its ethylhydroxide, -bromide, -chloride and -iodide (LETTS), 1881, A., 717; 1882, A., 720.

**1:3-Diethylpiperidine** (WISCHNEGRADSKY), 1881, A., 444.

**Diethylpropylalkine.** See Hydroxypropyldiethylamine.

**Diethylpropylglycoline.** See Dihydroxypropyldiethylamine.

**Diethylpyrogallol** (BENEDIKT), 1876, i., 916; (v. HOFMANN), 1878, A., 870. nitro- (WESELSKY and BENEDIKT), 1882, A., 53.

**Diethylquinol.** See 1:4-Diethoxybenzene.

**Diethylresorcinol.** See 1:3-Diethoxybenzene.

**Diethylresorcylaldehyde** (2:4-diethoxybenzaldehyde) (TIEMANN and LEWY), 1878, A., 424.

**Diethylstilbene.** See Diethyldiphenylethylene.

**Diethylsuccinic acids** (HELL and MÜHLHAUSER), 1880, A., 543.

**Diethylsulphamic chloride** (BEHREND), 1882, A., 1283.

**Diethylsulphone** (*sulphuric diethoxide*) (FRANKLAND and LAWRENCE), 1879, T., 245; (OTTO), 1880, A., 811. action of chlorine on (SPRING and WINSINGER), 1882, A., 939.

**Dietrichite,** a new alum from Hungary (v. SCHRÖCKINGER), 1879, A., 440.

## DIFFUSION—

**Diaphragms,** passage of gases through liquid (EXNER), 1876, ii., 163.

**Dialyser,** gelatin jelly as (WOODCOCK), 1882, A., 663.

**Dialysis,** continual apparatus for (LEBAIGUE), 1879, A., 347.

**Diffusion,** researches on (JOUIN), 1880, A., 526.

use of, in the study of the phenomena of dissociation (TROOST), 1879, A., 1006.

application of photometry to the study of (v. WROBLEWSKI), 1881, A., 956.

change produced by, in the reaction of a solution of mixed salts; and on the secretion of acid urine from alkaline blood (MALY), 1876, i., 875.

between dry and moist air (DUFOR), 1874, 758; 1876, ii., 42; (v. REUSCH), 1875, 127.

some organic and inorganic compounds (SCHEFFER), 1882, A., 1159.

of gases and liquids, motion produced by the (SAINTE-CLAIRE DEVILLE), 1880, A., 293.

of gases through vegetable membranes (BARTHÉLEMY), 1873, 1251.

of gases through porous walls (DUFOR), 1873, 835.

thermo-, of gases (FEDDERSEN), 1873, 834.

artificial reproduction of the phenomena of the gaseous, of leaves, by porous and humid pulverulent bodies (MERGET), 1874, 759.

of liquids (STEFAN), 1880, A., 364.

of liquids through capillary tubes, influence of temperature on (GUEROUT), 1875, 329.

of liquids, influence of voltaic currents on (GORE), 1881, A., 963; 1882, A., 565.

of salts (SACHSE), 1874, 1054; (MARIGNAC), 1875, 35.

of acid solutions of mixtures of salts (HINTEREGGER), 1880, A., 89.

of solids (COLSON), 1882, A., 357, 454.

of vapours through porous cells (PULFJ), 1877, ii., 835.

**Osmose** (*diosmose*) (BARANETZKY), 1873, 346.

lecture experiment on (HEINTZ), 1874, 1132.

## DIFFUSION—

- Osmose** (*diosmose*), use of parchment-paper in (ECKSTEIN), 1881, A., 952.  
 electric (GORE), 1881, A., 963; 1882, A., 260.  
 and liquid diffusion, electric currents caused by (GORE), 1881, A., 963.

**Diffusion residue**, composition of (PETERMANN), 1881, A., 301.

- nutritive value of (PELLET and LE LEVANDIER), 1880, A., 734; 1881, A., 933.  
 from beet-sugar manufacture, preservation of (MÄRCKER), 1881, A., 932.  
 and "press" residues as food, comparison of (SIMON-LEGRAND), 1881, A., 757.

**Diformin**. See Glyceryl diformate.**Difurfurotolylene-*m*-diamine** (SCHIFF), 1880, A., 391.**Difurfuryldivinyl ketone** (*difurfurylidenacetone*) (CLAISEN), 1882, A., 513.**Digallic acid** (SCHIFF), 1874, 267; 1875, 763, 1197; 1879, A., 466, 646; 1880, A., 551.

formation of, and the nature of tannin (SCHIFF), 1878, A., 673.

preparation of (FREDA), 1879, A., 645.

action of sulphuretted hydrogen on (SCHIFF), 1880, A., 551.

See also Gallotannic acid.

**Digestibility** of the fat of hay (SCHULZE), 1874, 85.

of food, influence of the addition of fat on (HOFMEISTER), 1874, 83.

**Digestion**, chemistry of (WATSON), 1879, T., 539.

observations on, made through the agency of a gastric fistula (RICHER), 1877, ii., 631.

changes of temperature during (MALY), 1881, A., 926.

influence of alcohol, beer, and wine on (FLEISCHER), 1881, A., 752.

influence of malt liquors on (EMKEN), 1881, A., 752.

effect of alumina salts on (MOTT), 1881, A., 189.

influence of bile on (QUINCKE), 1879, A., 549.

influence of certain salts and alkaloids on (WOLBERG), 1881, A., 752, 834.

spectroscopic examination of the chlorophyll in the residues of (CHAUTARD), 1873, 521.

of albuminoids (SCHMIDT-MÜLHEIM), 1880, A., 484.

of the perisperm (*albumin*) (VAN TIEGHEM), 1877, ii., 349.

**Digestion** of fatty matters (DUCLAUX), 1882, A., 1119.

of gelatinous tissues (ETZINGER), 1875, 94.

of linseed mucilage with artificial gastric juice (FUDAKOWSKI), 1877, ii., 911.

gastric (DUCLAUX), 1882, A., 753; (KIETZ), 1882, A., 877.

intestinal (DUCLAUX), 1882, A., 1119.

pancreatic (NENCKI), 1875, 479; (SALKOWSKI), 1879, A., 814;

(DUCLAUX), 1882, A., 1118; (BÉCHAMP), 1882, A., 1119.

formation of aspartic acid in (RADZIEJEWSKI and SALKOWSKI), 1875, 375.

salivary, products of (CHITTENDEN and GRISWOLD), 1882, A., 320.

in horses (ELLENBERGER and HOFMEISTER), 1882, A., 1119.

of food by the horse when at work (V. WOLFF), 1880, A., 414.

in sheep (V. WOLFF), 1880, A., 484.

**Digitalein**, **digitalin**, **digitonin**, **digitoxin** and **digitaliresin** (SCHMIEDEBERG), 1875, 1266.**Digitalin**. See also Glucosides.

*Digitalis purpurea*, constituents of (SCHMIEDEBERG), 1875, 1266.

"**Digluco**" (DEMOLE), 1880, A., 30.

**Diglyc** (BRESLAUER), 1880, A., 29.

**Diglycolamic ureide** (MULDER), 1873, 382.

**Diglycollic acids**, substituted imido-, formation of, in the preparation of *p*-tolyl- and phenyl-glycine (MEYER), 1882, A., 518.

**Diglycollic ether**, thio- (BÖTTINGER), 1879, A., 138; (ANDREASCH), 1880, A., 236.

**Digu**anide and its salts (RATIKKE), 1879, A., 781.

synthesis of (HERTH), 1881, A., 896.

**Diheptine** (RENARD), 1880, A., 894; (MORRIS), 1882, T., 174.

**Di-*n*-heptylacetic acid**. See Hexadecioic acid.

**Dihydrindic acid**, *diamido*- (V. SOMMARUGA), 1879, A., 63.

**Dihydrindindicarboxylic acid**, *diamido*- (V. SOMMARUGA), 1878, A., 799; 1879, A., 63.

**Dihydroanthracene** (LIEBERMANN and LANDSHOFF), 1881, A., 606; (LIEBERMANN and TOPF), 1882, A., 855; (LIEBERMANN and HOERMANN), 1882, A., 858.

action of nitric acid on (LIEBERMANN and LANDSHOFF), 1881, A., 606.

- Dihydroanthracenesulphonic acid**, salts of (LIEBERMANN), 1879, A., 537; 1882, A., 858.
- Dihydroanthramine** (LIEBERMANN and BOLLERT), 1882, A., 1105.
- Dihydroanthranol** (LIEBERMANN and TOPF), 1882, A., 857.  
formation of, from anthraquinone (v. PERGER), 1881, A., 607.
- Dihydrocamphenes** (KACHLER and SPITZER; LETTS), 1880, A., 669.
- Dihydrocarbostyryl** (*2'-hydroxydihydroquinoline*; *2'-oxydihydroquinoline*) (GABRIEL and ZIMMERMANN), 1879, A., 639; 1881, A., 274; (FRIEDLÄNDER and WEINBERG), 1882, A., 1209.  
synthesis of the homologues of (v. BAEYER and JACKSON), 1880, A., 406.
- Dihydrocarbostyryl**, amido-, and *mono-* and *di-*bromamido- (GABRIEL and ZIMMERMANN), 1879, A., 640.  
*p*-bromo- (GABRIEL and ZIMMERMANN), 1881, A., 274.
- Dihydrocornicularic acid**, and its salts (SPIEGEL), 1881, A., 1036.  
constitution of (SPIEGEL), 1882, A., 1077.
- iso***Dihydrocornicularic acid**, lactone of (SPIEGEL), 1882, A., 1077.
- m*-**Dihydrocymene** (*dihydro-m-methylcymene* (?) (WEIDEL and CIAMICIAN), 1880, A., 404.
- Dihydrodiisatinamide** (v. SOMMARUGA), 1879, A., 63.
- Dihydro-*m*-ethylbenzene**. See **Dihydro-*m*-ethyltoluene**.
- Dihydro-*m*-ethyltoluene** (WEIDEL and CIAMICIAN), 1880, A., 404.
- Dihydromethyl-*o*-oxyphenylacrylic acid**. See **Methyl-*o*-coumaric acid**.
- Dihydromethyl-*o*-oxyphenylcrotonic acid**. See ***o*-Hydroxyphenyl- $\alpha$ -methylcrotonic acid**.
- Dihydropyromeconic acid**, nitroso- (OST), 1879, A., 307.
- Dihydrostrychnine** (GAL and ETARD), 1879, A., 387.
- 2:4-Dihydroxyacetophenone**. See **Resacetophenone**.
- 2:5-Dihydroxyacetophenone**. See **Quinacetophenone**.
- Dihydroxyadicpic acid** (LIMPRICHT), 1873, 623; (HJELT), 1881, A., 256.
- $\alpha$ -Dihydroxyanthracene** (*chrysazol*) (LIEBERMANN), 1879, A., 537.
- $\beta$ -Dihydroxyanthracene** (*ruful*) (LIEBERMANN and BOECK), 1879, A., 258.
- 1:2-Dihydroxyanthraquinone**. See **Alizarin**.
- 1:3-Dihydroxyanthraquinone** (*purpur-xanthin*; *xanthopurpurin*) (LIEBERMANN and FISCHER), 1876, i., 248; (LIEBERMANN), 1877, i., 613; (ANON.), 1878, A., 738.  
**2:4-dibromo-** (SCHUNCK and ROEMER), 1878, T., 424.
- 1:4-Dihydroxyanthraquinone**. See **Quinizarin**.
- 1:3'-Dihydroxyanthraquinone**. See **Chrysazin**.
- 1:4'-Dihydroxyanthraquinone**. See **Anthrastifin**.
- 2:2'-Dihydroxyanthraquinone**. See ***iso*Anthraflavic acid**.
- 2:3'-Dihydroxyanthraquinone**. See **Anthraflavic acid**.
- 1:2-Dihydroxyanthraquinonecarb-oxylic acid** (HAMMERSCHLAG), 1878, A., 323.
- 1:3-Dihydroxyanthraquinonecarb-oxylic acid** (*munjistin*; *purpur-xanthic acid*) (SCHUNCK and ROEMER), 1877, i., 666; ii., 738; 1878, T., 422; (ROSENSTIEHL), 1878, A., 428; (ANON.), 1878, A., 738.  
action of reagents on (SCHUNCK and ROEMER), 1878, T., 424.
- Dihydroxyanthraquinonesulphonic acid** (CLAUS), 1882, A., 1106.
- Dihydroxyarsinobenzoic acid**. See ***p*-Benzarsinic acid**.
- 2:4-Dihydroxybenzaldehyde**. See **Resoreylaldehyde**.
- 2:5-Dihydroxybenzaldehyde**. See **Genitisc aldehyde**.
- 3:4-Dihydroxybenzaldehyde**. See **Protocatechnic aldehyde**.
- 1:2-Dihydroxybenzene**. See **Pyrocatechol**.
- 1:3-Dihydroxybenzene**. See **Resorcinol**.
- 1:4-Dihydroxybenzene**. See **Quinol**.
- Dihydroxybenzeneazo-**. See under **Azo-**.
- $\alpha$ -Dihydroxybenzenesulphonic acid** and its salts (BARTH and v. SCHMIDT), 1879, A., 933.
- op*-Dihydroxybenzhydrol** (v. BAEYER and BURKHARDT), 1878, A., 887; 1880, A., 658; (MICHAEL), 1881, A., 592.
- 2:3-Dihydroxybenzoic acid** (*pyrocatechol-*o*-carboxylic acid*), preparation and properties of (MILLER), 1882, T., 398.
- 2:4-Dihydroxybenzoic acid** ( *$\beta$ -resorcylic acid*) and its salts and derivatives (BLOMSTRAND), 1873, 506; (TIEMANN and REIMER), 1879, A., 721; (SENHOFER and BRUNNER), 1881, A., 265; (TIEMANN and PARRI-

- sius), 1881, A., 270; (FAHLBERG), 1881, A., 818; (MILLER), 1882, T., 409; (ZEHENTER), 1882, A., 193.
- 2:1-Dihydroxybenzoic acid** ( *$\beta$ -resorcylic acid*), mono- and di-bromo-, and their salts (ZEHENTER), 1882, A., 193.
- 2:5-Dihydroxybenzoic acid** (*quinol-carboxylic acid; gentisic acid; hydroxy-salicylic acid*) and its salts (DEMOLE), 1875, 253; (V. RAKOWSKI and LERPENT), 1875, 1197; (GOLDBERG), 1879, A., 928; (SENHOFER and SARLAY), 1881, A., 1140; (MILLER), 1882, T., 409; (TIEMANN and MÜLLER), 1882, A., 52.
- 2:6-Dihydroxybenzoic acid** and its salts (SENHOFER and BRUNNER), 1881, A., 266.  
preparation and properties of (MILLER), 1882, T., 410.
- 3:4-Dihydroxybenzoic acid.** See Protocatechuic acid.
- 3:5-Dihydroxybenzoic acid** ( *$\alpha$ -resorcylic acid*) (BARTH), 1879, A., 157, 644.  
preparation and properties of (MILLER), 1882, T., 409.  
constitution of (BARTH and SENHOFER), 1875, 365.
- 2:4'-Dihydroxybenzophenone** (*salicyl-phenol*) (MICHAEL), 1881, A., 592.
- 3:3'-Dihydroxybenzophenone**, and its salts (STAEDEL and SAUER), 1880, A., 646.
- 4:4'-Dihydroxybenzophenone** (STAEDEL and GAIL), 1878, A., 671; 1879, A., 326; (V. BAEYER and BURKHARDT), 1878, A., 886; (LIEBERMANN), 1878, A., 887; (STAEDEL and SAUER), 1879, A., 242; (DOENER), 1880, A., 240; (ZULKOWSKI), 1882, A., 1291.  
*tetrabromo-* (V. BAEYER and BURKHARDT), 1880, A., 657.
- Dihydroxybenzophenone.** See also Benzoylpyrocatechol and Benzoylresoreinol.
- 1:2-Dihydroxybutane** (*n-butylene glycol*) (GRABOWSKI and SAYTZEFF), 1876, i., 542; (NEVOLÉ), 1877, ii., 868.
- $\beta$ -Dihydroxybutyric acid.** See Butylglyceric acid.
- Dihydroxydicymyl** (*dithymol*) (DIANIN), 1882, A., 624.
- Dihydroxydicymylethane** (*dithymoxyzyl-ethane*) (STEINER), 1878, A., 507.  
formation of, by reduction of  $\omega$ -trichlorodihydroxydicymylethane (JÄGER), 1875, 159.  
 $\omega$ -trichloro-, and its derivatives (JÄGER), 1875, 159; 1877, i., 262.
- Dihydroxydicymylethylene** (*dithymoylethene*), formation of, by reduction of  $\omega$ -trichlorodihydroxydicymylethane (JÄGER), 1875, 159.
- Dihydroxydiethyldimethylamine** (MORLEY), 1880, T., 234.
- Dihydroxydiethyl-p-toluidine** (DEMOLE), 1874, 901.
- 3:5-Dihydroxy-1:4-dimethylbenzene.** See Betoreinol.
- Dihydroxydimethylbenzophenone** (DREWSSEN), 1882, A., 1099.
- Dihydroxydiphenyl.** See Diphenol.
- Dihydroxydiphenyldisulphonic acid** (BARTH and SCHREDER), 1879, A., 65.
- Dihydroxydiphenylethane** (*diphenol-ethane*) (FABINYI), 1878, A., 430.  
 $\omega$ -trichloro- (TER MEER), 1875, 158.
- Di-p-hydroxydiphenylethylene** (TER MEER), 1875, 158.
- Di-p-hydroxydiphenylmethane**, and *tetrabromo-* (STAEDEL and BECK), 1878, A., 420; 1879, A., 324.  
oxidation of (STAEDEL and GAIL), 1879, A., 325.
- Dihydroxydiphenylphthalide** (*phenylresorcinolphthalide anhydride*) (V. PICHMANN), 1882, A., 184.
- Dihydroxydiphenylsulphone** (*oxysulphobenzide*), and its derivatives (ANNAHEIM), 1874, 265, 795; (GUARESCHI), 1878, A., 859.  
crystalline form, specific gravity and molecular volume of (ANNAHEIM), 1877, i., 79.  
*diamido-* (ANNAHEIM), 1874, 697.  
*tetrabromo-*, *tetrachloro-*, and *tetradio-* (ANNAHEIM), 1874, 796.  
*di-bromo-*, and *diiododinitro-* (ANNAHEIM), 1876, ii., 296.  
*tetrannitro-*, and its salts (ANNAHEIM), 1879, A., 244.
- Dihydroxydipropylmalonic acid** and *di-bromo-*, dilactones of (HJELT), 1882, A., 946.
- Dihydroxyditolyl ketone** (DREWSSEN), 1882, A., 1099.
- Dihydroxyethylbenzene** (*styrolene alcohol*) (WACHENDORFF and ZINCKE), 1877, ii., 614; (HUNLAUS and ZINCKE), 1878, A., 223; (BREUER and ZINCKE), 1878, A., 885.  
 $\beta$ -phenylnaphthalene from (BREUER and ZINCKE), 1879, A., 327.  
pinacolins of (BREUER and ZINCKE), 1878, A., 886.
- "Dihydroxyfumaric acid,"** Tanatar's. See Racemic acid.



- Dihydroxyheptylene, and the action of acetic anhydride on (MORRIS), 1882, T., 178.
- Di-*p*-hydroxyhydrobenzoin (*hydro-p-oxybenzoin*), and di-*p*-hydroxyiso-hydrobenzoin (HERZFELD), 1878, A., 65.
- " $\alpha$ -Dihydroxylquinine" (SKRAUP), 1879, A., 809.
- Dihydroxymalonic acid. See Mesoxalic acid.
- 1:4-Dihydroxy-2-methylantraquinone (*methylquinizarin*) (NIETZKI), 1878, A., 154.
- 3:4-Dihydroxy-2-methylantraquinone (*methylalizarin*) (FRAUDE), 1879, A., 635.
- Dihydroxymethylcoumarin (*allylenedigallcin*) and its diacetate (WITTENBERG), 1882, A., 1289.
- Dihydroxymethylnaphthaquinone (THÖRNER), 1880, A., 48.
- 1:4'-Dihydroxynaphthalene (CLEVE), 1878, A., 153.
- 2:2'-Dihydroxynaphthalene (MERZ and WEITH), 1877, ii., 899; (WEBER), 1882, A., 205.
- 2:3'-Dihydroxynaphthalene from naphthalene- $\alpha$ -disulphonic acid (ARMSTRONG and GRAHAM), 1881, T., 139.
- 1:2-Dihydroxynaphthalenedisulphonic acid (GRIESS), 1881, A., 179.
- 2:3-Dihydroxynaphthaquinone (DIEHL and MERZ), 1878, A., 889.
- $\alpha\beta$ -Dihydroxyoctoic acid (*isobutyl-methylglyceric acid*) (DEMARÇAY), 1878, A., 661.
- Dihydroxypentane (*amyl glycol*) from diethylcarbinol (WAGNER and SAYTZEFF), 1876, i., 547.
- oxidation of (FLAWITZKY), 1878, A., 564.
- 3:4-Dihydroxyphenylacetic acid. See  $\alpha$ -Homoprotocatechuic acid.
- Dihydroxyphenylantranol. See Phenolphthalidin.
- Dihydroxyphenylcrotonic acids. See Methylumbelliferic acid and Homocaffeic acid.
- "Dihydroxyphenylene cyanurate" (BIENBAUM and LURIE), 1881, A., 95.
- Dihydroxyphenylene diphenyl diketone (*dibenzoylquinol*) (DOEBNER and WOLFF), 1879, A., 638; (DOEBNER), 1882, A., 508.
- Dihydroxyphenylene diphenyl diketone (*dibenzoresorcinol*) (DOEBNER and STACKMANN), 1879, A., 319; (DOEBNER), 1882, A., 508.
- $\alpha$ -3:4-Dihydroxyphenylpropionic acid. See Hydrocaffeic acid.
- $\alpha\beta$ -Dihydroxy- $\alpha$ -phenylpropionic acid (*atroglyceric acid*) and its salts (FITTING and KASR), 1881, A., 428.
- Dihydroxyphenylsulphuric acid (BAUMANN), 1879, A., 149.
- Dihydroxypropyldiethylamine (*diethylpropylglycoline*) (ROTH), 1882, A., 1195.
- Dihydroxypropyldimethylamine (*dimethylpropylglycoline*) (ROTH), 1882, A., 1195.
- Dihydroxypropylmalonic acid, barium salt of (HJELT), 1882, A., 947.
- Dihydroxypropylpiperidine (ROTH), 1882, A., 1194.
- Dihydroxypyridine-2-carboxylic acid (*concomanic acid*) (REIBSTEIN), 1882, A., 197.
- Dihydroxypyrotartaric acid (*citratar-taric acid*), conversion of oxyceitraconic acid into (MORAWSKI), 1875, 1253.
- Dihydroxyquinoline. See Oxycarbo-styryl.
- $\alpha$ -Dihydroxyquinone (THÖRNER), 1878, A., 575.
- "Dihydroxysuberlic acid" (GANTTER and HELL), 1882, A., 716.
- 2:4-Dihydroxysulphobenzoic acid and its salts (ZEHENTER), 1882, A., 193.
- 2:5-Dihydroxysulphobenzoic acid (*hydroxysalicylsulphonic acid*; *sulphohydroxysalicylic acid*) and its salts (SENHOFER and SARLAY), 1881, A., 1141.
- Dihydroxytartaric acid (*carboxy-tartronic acid*), sodium salt of (GRUBER), 1879, A., 643.
- 3:6-Dihydroxyterephthalic acid (*quinonchydroadicarboxylic acid*) and its salts (HERRMANN), 1882, A., 714.
- Dihydroxythymoquinone (LADENBURG and ENGELBRECHT), 1878, A., 60; (ZINCKE), 1881, A., 595.
- 2:4-Dihydroxytoluene (*eresorcinol*) (NEVILE and WINTHER), 1882, T., 422; (KNECHT), 1882, A., 729, 969; (VOGT and HENNINGER), 1882, A., 729.
- 2:5-Dihydroxytoluene. See Toluquinol.
- 3:4-Dihydroxytoluene (*homopyrocatechol*) (NEVILE and WINTHER), 1882, T., 426.
- 3:5-Dihydroxytoluene. See Orcinol.
- Dihydroxytoluenes, preparation and reactions of (NEVILE and WINTHER), 1882, T., 415.
- Dihydroxytoluic acid (*homohydroxysalicylic acid*, *toluquinolcarboxylic acid*) and its salts (BRUNNER), 1881, A., 1142.

- Dihydroxytoluic acid.** See also Homoprotocatechuic acid, Hydromethylsalicylic acids, *o*-Hydroxymandelic acid, and *p*-Orsellic acid.
- Dihydroxytoluquinone**, dichloro-, and its potassium derivative (BRÄUNINGER), 1878, A., 147.
- Dihydroxytolyl methyl ketone** (*oreacetophenone*) (RASINSKI), 1882, A., 1289.
- Dihydroxytriphenylmethanecarboxylic acid.** See Phenolphthalin.
- Dihydroxyvaleric acid**, barium salt of (FITZIG and MESSERSCHMIDT), 1882, A., 35.
- 2:6-Dihydroxy-*m*-xylene** (GUNDELACH), 1878, A., 61.
- 2:5-Dihydroxy-*p*-xylene.** See Xyloquinol.
- 3:5-Dihydroxy-*p*-xylene.** See Betorecinol.
- Diiodohydrin.** See Glyceryl diiodohydrin.
- Diisatindiamide**, and its derivatives (V. SOMMARUGA), 1878, A., 507, 798; 1879, A., 63; 1881, A., 434.
- Diisatogen** (V. BAEYER), 1882, A., 620.
- Diisethionamic acid** (SALKOWSKI), 1874, 464.
- Diisethionic acid**, ammonium salt of (CARL), 1880, A., 29.
- Dilactic acid** (WISLICEUS), 1873, 57.  
thio- (*thiodipropionic acid*), method of preparing (BÖTTINGER), 1880, A., 238; 1881, A., 415.
- Dilatometers** for determining the expansion of liquids (THORPE), 1880, T., 155.
- "Diortholeucaniline."** See Phenyl-ditolylmethane, *tri-p*-amido-.
- Dill-oil** (NIETZKI), 1874, 892.
- Di- $\beta$ -lutidine platinochloride** (WILLIAMS), 1882, A., 310.
- Dimalonamide**, imido- (CONRAD and GUTHZEIT), 1882, A., 947.
- Dimesityl-carbamide**, -guanidine and -thiocarbamide (EISENBERG), 1882, A., 956.
- Dimethamido-.** See Dimethylamido-.
- 2:4-Dimethoxybenzaldehyde** (TIEMANN and PARRISIUS), 1881, A., 271.
- 3:4-Dimethoxybenzaldehyde.** See Methylvanillin.
- 1:2-Dimethoxybenzene.** See Veratrol.
- 1:3-Dimethoxybenzene** (*dimethylresorcinol*) (HABERMANN), 1877, ii., 474; (OECHSNER DE CONINCK), 1881, A., 269; (TIEMANN and PARRISIUS), 1881, A., 270.  
 $\alpha$ -dibromo- (TIEMANN and PARRISIUS), 1881, A., 270.
- 1:3-Dimethoxybenzene** (*dimethylresorcinol*),  $\alpha$ -dibromo-, mono- and di-chloro-, dinitro-, and 2:4:5-trinitro- (HÖNIG), 1878, A., 727.
- 1:4-Dimethoxybenzene** (*dimethylquinol*), derivatives of (HABERMANN), 1878, A., 728; (KARLOF), 1881, A., 272.  
amido- (MAGATTI), 1881, A., 595; (MÜHLHÄUSER), 1882, A., 302.  
2:3-diamido-, hydrochloride of (KARLOF), 1881, A., 272.  
2:5(?)-dibromo-, 2:6-dichloro- and tetrachloro- and mono-, 2:5-di-, and tri-nitro- (HABERMANN), 1878, A., 728.
- 1:4-Dimethoxybenzenedisulphonic acid** and its salts (KARLOF), 1881, A., 272.
- 2:5-Dimethoxybenzoic acid** (TIEMANN and MÜLLER), 1882, A., 53.
- 3:4-Dimethoxybenzoic acid.** See Veratric acid.
- 3:5-Dimethoxybenzoic acid** and its salts (TIEMANN and STRENG), 1882, A., 52.
- p*-Dimethoxybenzophenone** (BÖSLER), 1881, A., 422.
- Dimethoxybenzoylcarboxylic acid** (*veratroylcarboxylic acid*), and its relation to  $\alpha$ -homoveratric acid (TIEMANN and MATSMOTO), 1878, A., 503.
- p*-Dimethoxydiphenylmethane** (TERMEER), 1875, 158; (STAEDEL and BECK), 1878, A., 420; 1879, A., 325.
- Dimethoxydiphenylsulphone** and dibromo- and dinitro- (ANNAHEIM), 1874, 796.
- 3:4-Dimethoxymethylbenzene** (*dimethylthiomuropyrocatechol*) (TIEMANN and MENDELSON), 1876, i., 74.
- 3:5-Dimethoxymethylbenzene.** See Dimethylresorcinol.
- 2:2'-Dimethoxynaphthalene** (WEBER), 1882, A., 205.
- Dimethoxytetrethoxypararosanine** (V. HOFMANN), 1880, A., 250.
- Dimethoxytriphenylmethane**, triamido- (*leucanisidine*) (FISCHER), 1882, A., 834.
- Dimethyl diketone**, oxime of (*isonitrosomethylacetone*) (MEYER and ZÜBLIN), 1878, A., 487, 659.
- Dimethyl ketone.** See Acetone.
- Dimethylacrylic acid** (*pentenoic acid*) (V. MILLER), 1879, A., 307; 1880, A., 35, 315.  
mode of forming (DUVILLIER), 1879, A., 706, 782; 1880, A., 624.
- Dimethylalloxan**, hydrated and anhydrous (MALY and ANDREASCH), 1882, A., 630.

- Dimethylalloxantins** (MALY and ANDREASCH), 1882, A., 633; (ANDREASCH), 1882, A., 1055.
- Dimethylallylcarbinol.** See Hexenyl alcohol.
- Dimethylamarine** (CLAUS and ELBS), 1880, A., 882.
- Dimethylamidanisic methyl ether.** See Methoxydimethylamidobenzoic acid.
- Dimethylamidoanisole, *o*- and *p*-** (GRIESS), 1880, A., 637.
- Dimethyltriamidobenzene** (WURSTER and SENDTNER), 1880, A., 110.
- Dimethylamidobenzeneazobenzenesulphonic acid.** See Helianthin.
- Dimethylamidobenzeneazobenzoic acid** (GRIESS), 1877, ii., 456.
- Dimethyl-*p*-amidobenzoic acid,** formation of (MICHLER), 1876, ii., 68.
- Dimethylamidobenzophenones** (*benzoyl-dimethylanilines*) [m.ps. 90° and 39°] and their salts (FISCHER), 1877, ii., 606; 1881, A., 589; (DOEBNER), 1881, A., 165; (DOEBNER and WEISS), 1882, A., 176.
- Dimethylamidodiphenylsulphone** (MICHLER and MEYER), 1880, A., 108.
- Dimethylamidoethylic formate.** See Ethylic dimethylcarbamate.
- o*-Dimethylamidophenol** (GRIESS), 1880, A., 637.
- Dimethylamidophenylamidophenolsulphonic acid, trichloro-** (SCHMITT and ANDRESEN), 1882, A., 401.
- Dimethylamidophenylglyoxylic acid** (MICHLER and HANNHART), 1878, A., 421.
- Dimethylamidophenyl- $\alpha$ -naphthylsulphone** (MICHLER and SALATHÉ), 1880, A., 108.
- Dimethylamidophenylloxamide** (SENDTNER), 1879, A., 627.
- Dimethylamidophenyl-*p*-tolylsulphone** (MICHLER and MEYER), 1880, A., 108.
- Dimethyl- $\alpha$ -amidopropionic acid,** anhydride of the methyl hydroxide of (BRÜHL), 1876, i., 698.
- Dimethyl-*mono*- and -*di*-amidothymoquinone** (ZINKE), 1881, A., 595.
- Dimethylamidotriphenylmethane** (FISCHER), 1879, A., 53; 1881, A., 588.
- Dimethylamine** (DUVILLIER and BUISINE), 1879, A., 913.  
preparation of (DUVILLIER and BUISINE), 1881, A., 1025.  
action of chlorosulphonic acid on (BEHREND), 1881, A., 716; 1882, A., 164.  
hydrochloride, action of cyanamide on (TATARINOFF), 1880, A., 233.
- Dimethylaniline** (GIRARD), 1876, i., 264.  
from quinoline (KÖRNER), 1882, A., 739.  
preparation of (KRAEMER and GRODZKI), 1880, A., 802.  
preparation of, from trimethylphenylammonium iodide (MERILL), 1878, A., 787.  
action of anilylic bromide on (CLAUS and RAUTENBERG), 1881, A., 584.  
action of aromatic acids, alcohols and aldehydes on (FISCHER), 1878, A., 51; 1879, A., 53; 1880, A., 39, 40, 636, 661; 1881, A., 587.  
action of aromatic sulphonic chlorides on (MICHLER), 1878, A., 140.  
action of benzoic anhydride on (FISCHER), 1880, A., 636.  
action of benzoic chloride on (MICHLER and DUPERTIUS), 1877, ii., 334; (E. and O. FISCHER), 1879, A., 787.  
action of bromacetylbenzene on (STAEDEL and SIEPERMANN), 1880, A., 639.  
action of chloroform and perchloromethane on (MERZ and WEITH), 1877, ii., 886; (HANNHART), 1879, A., 714.  
action of trichloromethylsulphochloride on (MICHLER and MORO), 1879, A., 920.  
action of, on ethylenic bromide and acetylenic tetrabromide (SCHÖOP), 1881, A., 160.  
action of hydrogen dioxide on (LEEDS), 1882, A., 502.  
action of mercuric chloride on (KLEIN), 1878, A., 667; 1879, A., 231.  
action of  $\alpha$ -naphthalenesulphonic chloride on (MICHLER and SALATHÉ), 1880, A., 108.  
action of nitric oxide on (LIPPMANN and LANGE), 1881, A., 161.  
action of nitrous acid on (V. BAeyer and CARO), 1875, 83.  
action of phosphorus trichloride on (HANIMANN), 1876, ii., 417.  
action of phosphorus pentachloride on (MICHLER and WALDER), 1882, A., 175.  
action of *p*-toluenesulphonic chloride on (MICHLER and MEYER), 1880, A., 108.  
oxidation of a mixture of phenylenedimethyldiamine and (BINDSCHEDLER), 1880, A., 391.  
colouring matters from (FISCHER), 1878, A., 51; 1879, A., 53; 1880, A., 40, 636; 1881, A., 587; 1882, A., 392, 833; (WICHELHAUS), 1882, A., 58.

**Dimethylaniline**, preparation of blue colouring matters from (AXON.), 1879, A., 571.

blue colouring matter from the action of *p*-toluenesulphonic chloride on (MICHLER and MEYER), 1880, A., 108.

synthesis of ketones by (MICHLER and DUPERTIUS), 1877, ii., 333.

some compounds of the leuco-base from eumol and (ZIEGLER), 1880, A., 640.

derivatives of (WEBER), 1875, 1200; (MERZ and WEITH), 1877, ii., 603.

substitution products of (KRELL), 1873, 279.

ethiodide, decomposition of, by potash (CLAUS and RAUTENBERG), 1881, A., 584.

ferrocyanide (FISCHER), 1878, A., 408.  
ferrocyanide, acid (EISENBERG), 1881, A., 261.

ferro- and ferri-cyanides of (WURSTER and ROSER), 1880, A., 98.

methiodide, decomposition of, by potash (CLAUS and RAUTENBERG), 1881, A., 584.

salicin of (FISCHER), 1877, ii., 605.  
sulphochloride (BEHREND), 1882, A., 164.

**Dimethylaniline** amido-. See Phenyl-enedimethyldiamine.

*m*-bromo- (WURSTER and SCHEIBE), 1880, A., 107.

*p*-bromo- (MERZ and WEITH), 1877, ii., 603; (WURSTER and BÉRAN), 1880, A., 108.

action of heat on (BRUNNER and BRANDENBURG), 1878, A., 667.

*p*-mono-, 2:4-*di*- and 2:4:6(*t*)-*tri*-chloro- (KRELL), 1873, 279.

2:4-*dichloro*- (WENGHOFFER), 1878, A., 298.

*trichloro*-, amidophenol (SCHMITT and ANDRESEN), 1882, A., 401.

*p*-nitro- (MERZ and WEITH), 1877, ii., 603; (WURSTER), 1879, A., 626.

2:4-*dinitro*- (LEYMANN), 1882, A., 1057.

2:4-*dinitro*- and *isodinitro*- (MERTENS), 1877, ii., 605.

*trinitro*- (KRELL), 1873, 279.

*pentanitro*- (MICHLER and SALATHÉ), 1880, A., 108.

*p*-nitroso- (WURSTER and ROSER), 1880, A., 99.

preparation of (v. BAAYER and CARO), 1875, 83; (MELDOLA), 1881, T., 37.

action of aromatic bases on (KIMICH), 1876, i., 268.

**Dimethylaniline**, *p*-nitroso-, action of, on phenols which do not contain the methyl group (MELDOLA), 1880, A., 162.

hydrochloride, action of, on sodium  $\beta$ -naphtholsulphonate, and on phenolsulphonic acids which do not contain the methyl-group (STEBBINS), 1881, A., 161.

**Dimethylaniline** orange as an indicator (LUNGE), 1882, A., 774.

**Dimethylaniline** phtalein (*tetramethyldiamidodiphenylphtalide*) (FISCHER), 1880, A., 41; 1881, A., 587.

bromo- (FISCHER), 1878, A., 51.

*hexanitro*- (FISCHER), 1881, A., 588.

**Dimethylaniline** phtalin (FISCHER), 1881, A., 588.

**Dimethylanilinesulphonic acid** (SMYTH), 1875, 164.

nitro- (MICHLER and WALDER), 1882, A., 176.

**Dimethylanisidine** (MÜHLHAUSER), 1882, A., 302.

**Dimethylanthraccene** (WACHENDORFF and ZINCKE), 1878, A., 232; (SADTLER and McCARTER), 1881, A., 1129.

synthesis of, and its *di*bromo-derivative (VAN DORP), 1874, 63.

**Dimethylantraquinone** (WACHENDORFF and ZINCKE), 1878, A., 232.

**Dimethylarsinic acid** (*cacodylic acid*), oxidation of (LA COSTE), 1881, A., 905.

action of, on the animal organism (SCHULZ), 1879, A., 476.

**Dimethylbarbituric acid** (THORNE), 1881, T., 543; (CONRAD and GETZHEIT), 1881, A., 1033.

synthesis of (MULDER), 1879, A., 618.

**Dimethylbenzamide** (HALLMANN), 1876, ii., 418.

1:3-Dimethyl-4-benzamide (*xythylamide*) (ADOR and MEIER), 1880, A., 252.

1:4-Dimethyl-2-benzamide (*isoxylthylamide*) (JACOBSEN), 1882, A., 187.

**Dimethylbenzene**. See Xylene.

**Dimethylbenzhydrol** (WEILER), 1875, 151.

1:3-Dimethyl-4-benzoic acid (*xylylic acid*), its preparation and derivatives (ADOR and MEIER), 1880, A., 252.

1:4-Dimethyl-2-benzoic acid (*isoxylthyl acid*), and its corresponding xylylenic acid and salts (JACOBSEN), 1882, A., 187.

1:3-Dimethyl-5-benzoic acid. See Mesitylenic acid.



- 1:3-Dimethyl-4-benzoic chloride (*xylylic chloride*) (ADOR and MEIER), 1880, A., 252.
- Dimethylbenzophenone. See Phenyl xylol ketone and Ditolyl ketone.
- Dimethylisobutylcarbinol (*tert.-heptylic alcohol*) [b.p. 130°] (PAWLOFF), 1874, 1076; (KASCHIRSKY), 1882, A., 37.
- Dimethyl-*tert.*-butylcarbinol (*tert.-heptylic alcohol*) (KASCHIRSKY), 1882, A., 37.
- Dimethyl-di-*tert.*-butylethylene. See Dodecylene.
- Dimethylbutylmethane. See Heptane.
- Dimethylcaffeic acid (TIEMANN and NAGAI), 1878, A., 580.
- Dimethylcarbamic chloride (MICHLER and ESCHERICH), 1879, A., 934.
- s-Dimethylcarbamide (MALY and HINTEREGGER), 1881, A., 747.
- Dimethyl- $\alpha$ -carbopyrrolamide (BELL), 1879, A., 525.
- Dimethylconiine (v. HOFMANN), 1881, A., 745.
- Dimethylconylammonium iodide (v. HOFMANN), 1881, A., 745.
- Dimethylisocyanuric acid (v. HOFMANN), 1882, A., 822.
- Dimethyldeoxybenzoin. See *m*-Xylol benzyl ketone.
- Dimethyldiacetonamine and its salts (GÜTSCHMANN), 1879, A., 1035.
- Dimethyldialuric acid (MALY and ANDREASCH), 1882, A., 632.
- Dimethyldiethylammonium methyl sulphate (CLAËSSON and LUNDVALL), 1881, A., 241.
- Dimethyldiethylmethane (*heptane*) from petroleum and a ketone from (SCHORLEMMER), 1873, 319.
- Dimethyldiethylpyrazine (*diethylketine*) (TREADWELL), 1881, A., 895; 1882, A., 166.
- Dimethyldiethylsulphonamide (BEHREND), 1882, A., 1282.
- Dimethyldihydropyridine in Dippel's oil (CIAMICIAN and DENNSTEDT), 1882, A., 529.
- Dimethyldioxethylamine. See Hydroxyethoxydimethylethylamine.
- Dimethyldipropylpyrazine (*dipropylketine*) (TREADWELL), 1882, A., 166.
- Dimethyldipyridine. See Dipicoline.
- Dimethylethylacetic acid (*hexoic acid*) (WISCHNEGRADSKY), 1874, 1083.
- Dimethylethylalkine. See Hydroxyethylmethylaniline.
- Dimethylethylazonium chloride (RENOUF), 1881, A., 152.
- Dimethylethylbenzene. See Ethylxylene.
- Dimethylethylcarbamine. See *tert.*-Amylamine.
- Dimethylethylcarbinol. See *tert.*-Amylic alcohol.
- s-Dimethylethylene. See  $\psi$ -Butylene.
- Dimethylethylpyridine (*parvoline*) (OECHSNER de CONINCK), 1881, A., 56, 443; 1882, A., 414.
- Dimethyleugenol, mercury derivative of (WASSERMANN), 1879, A., 790.
- Dimethyleuxanthone (GRAEBE and ERARD), 1882, A., 1301.
- Dimethylfumaric anhydride. See Dimethylmaleic anhydride.
- Dimethylgentisic acid and aldehyde (TIEMANN and MÜLLER), 1882, A., 53.
- Dimethylglyoxylcarbamide, a reduction-product of cholestrophane (ANDREASCH), 1882, A., 1054.
- Dimethylguanidine (TATARINOFF), 1880, A., 233.
- s-Dimethylguanidine hydrochlorides and platinochlorides (ERLENMEYER), 1882, A., 191.
- Dimethylhomoprotocatechuic acid ( $\alpha$ -homoveratric acid) (TIEMANN and MATSMOTO), 1878, A., 503.
- Dimethylhomopyrocatechol. See 3:4-Dimethoxymethylbenzene.
- Dimethylhydantoin. See Acetonylethylcarbamide.
- Dimethylhydrazine and its derivatives (FISCHER), 1876, i., 576; (RENOUF), 1881, A., 151.
- Dimethylhydrocaffeic acid (TIEMANN and NAGAI), 1878, A., 580.
- Dimethylic oxide (*methyl ether*), preparation of (ERLENMEYER and KRIECHBAUMER), 1874, 975.
- heat of solution of (BERTHELOT), 1881, A., 8.
- action of hydriodic acid on, at low temperatures (DA SILVA), 1876, i., 60.
- combination of, with hydrochloric acid (FRIEDEL), 1875, 1245.
- compound of, with hydrochloric acid, dissociation of (LEMOINE), 1881, A., 1096.
- use of, as a freezing agent, and its application to the preservation of meat (TELLIER), 1875, 488.
- chloro- (FRIEDEL), 1877, ii., 424.
- Dimethylic pulvate. See Methylic methylpulvate.
- Dimethylic sulphide, reactions of (CAHOUS), 1875, 1181; 1876, i., 696.
- additive products of, with bromacetic acid (BROWN and LETTS), 1874, 980.

- Dimethylketine.** See Tetramethylpyrazine.
- Dimethylmaleic acid** (*pyrocinchonic acid*; *dimethylfumarc acid*) and its derivatives (WEIDEL and V. SCHMIDT, 1879, A., 947; (HOOGEWERFF and VAN DORP, 1880, A., 406; (WEIDEL and BRIX), 1882, A., 1304.  
and its formation from oil of turpentine (ROSER), 1882, A., 1114.
- Dimethylmaleic anhydride** (ROSER), 1882, A., 1114; (WEIDEL and BRIX), 1882, A., 1304.
- Dimethylmaleinimide** (WEIDEL and BRIX), 1882, A., 1305.
- Dimethylmalonic acid**, potassium salt of (PINNER), 1882, A., 942.
- Dimethylmalonamide** (THORNE), 1881, T., 545.
- Dimethylmalonic acid** ( $\beta$ -*isopropyltartaric acid*) and its salts (MARKOWNIKOFF), 1874, 359; 1877, i., 61; (THORNE), 1881, T., 543.
- Dimethylmethylpyrogallol** (v. HOFMANN), 1880, A., 249.
- Dimethylnaphthalene** (EMMERT and REINGRUBER), 1882, A., 733.  
and its *hexabromide* and *tribromide* (GIOVANNOLZI), 1882, A., 854.
- Dimethylnaphthalenesulphonic acid** (GIOVANNOLZI), 1882, A., 855.
- Dimethylnaphthol** (CANNIZZARO and CARNELUTTI), 1881, A., 53.
- Dimethylnitrosamine** (RENOUF), 1881, A., 152.
- Dimethylorcinol**, preparation of, and *di*bromo- (TIEMANN and STRENG), 1882, A., 51.
- Dimethylloxalic acid.** See Hydroxyisobutyric acid.
- Dimethylloxamide** and its derivatives (WALLACH and WEST), 1877, ii., 184; (WALLACH and BOEHRINGER), 1877, ii., 185; (FISCHER), 1882, A., 628; (MALY and ANDREASCH), 1882, A., 633.  
action of phosphorus *pentachloride* on (WALLACH and BOEHRINGER), 1875, 565.
- Dimethylparabanic acid** (*cholestrophane*) (MENSCHUTKIN), 1876, i., 379; (MALY and HINTEREGGER), 1881, A., 747; 1882, A., 629; (FISCHER), 1882, A., 217, 628.
- Dimethylphenylenediamine.** See Phenylenedimethyldiamine.
- Dimethylphenylethane.** See Ditolyethane.
- "Dimethylphenylglycocine."** See "Phenylbetaine."
- Dimethylphenylmethane.** See Ditolylmethane.
- Dimethylphosphine chloride** (v. HOFMANN), 1873, 884.
- Dimethylpiperidine**, piryrene from (LADENBURG), 1882, A., 983.
- Dimethylpiperidine**, constitution of (v. HOFMANN), 1881, A., 622.  
iodide (v. HOFMANN), 1881, A., 621; (LADENBURG), 1882, A., 535.  
methylene iodide, and its salts (LADENBURG), 1882, A., 535.
- Dimethylpropionic acid.** See Valeric acid.
- Dimethylpropylalkine.** See Hydroxypropyldimethylamine.
- Dimethylisopropylcarbinol** (*tert.-lucrylic alcohol*) (KASCHIRSKY), 1879, A., 46; 1882, A., 37; (BOGOMOLETZ), 1881, A., 401; (RIZZA), 1882, A., 491.
- Dimethylpropylglycoline.** See Dihydroxypropyldimethylamine.
- Dimethylprotocatechuic acid.** See Veratric acid.
- Dimethylprotocatechuic aldehyde.** See Methylvanillin.
- Dimethylpyridine** (*lutidine*), heat of formation of (RAMSAY), 1879, T., 696.
- Dimethylpyridines** (*lutidines*), oxidation of (RAMSAY), 1879, A., 265.
- Dimethylpyrocatechol.** See Veratrol.
- Dimethylpyrrolone** (WEIDEL and CIAMICIAN), 1880, A., 404.
- Dimethylquinhydrone**, formula of (HESSE), 1880, A., 318.
- Dimethylquinol.** See 1:4-Dimethoxybenzene.
- 1:4-Dimethyl-3:5-quinol.** See Betoreinol.
- 1:4-Dimethyl-2:5-quinol.** See *p*-Xylo-2:5-quinol.
- Dimethylquinone.** See Xyloquinone.
- Dimethylresorcinol.** See 1:3-Dimethoxybenzene.
- Dimethyl- $\beta$ -resorcyaldehyde** (TIEMANN and PARRISIUS), 1881, A., 271.
- Dimethyl- $\alpha$ -resorcylic acid**, and its salts (TIEMANN and STRENG), 1882, A., 52.
- Dimethylsuccinamide**, action of phosphorus *pentachloride* on (WALLACH and KAMENSKI), 1881, A., 285.
- s-Dimethylsuccinic acid** (*isoadipic acid*; *hydropyrocinchonic acid*) and its salts (HARDTMUTH), 1878, A., 782; (WEIDEL and BRIX), 1882, A., 1305.
- as-Dimethylsuccinic acid** (*isobutanedicarboxylic acid*) (PINNER), 1882, A., 942.
- as-Dimethylsuccinimide** (PINNER), 1882, A., 942.
- Dimethylsulphamic acid**, and its ethyl salt (BEHREND), 1882, A., 1282.

- Dimethyl-*p*-sulphanilic acid**, and its salts (WENGHÖFFER), 1878, A., 297; (LAAR), 1880, A., 321.
- as*-Dimethylsulphonamide** (BEHREND), 1882, A., 1282.
- Dimethyltartaric acid** (BÖTTINGER), 1878, A., 32.
- "Dimethyltetrahydroxyanthraquinone"** (BRUNNER), 1881, A., 1142.
- Dimethylthiocarbazinic acid** (RENOUF), 1881, A., 152.
- Dimethylthioparabanic acid**, synthesis of (ANDREASCH), 1881, A., 896.
- Dimethyl-*o*-toluidine** (THOMSEN), 1878, A., 218.  
bromo- (MICHLER and SAMPAIO), 1882, A., 177.
- Dimethyl-*m*-toluidine**, action of bromoacetylbenzene on (STAEDEL and SIEPERMANN), 1880, A., 639; 1881, A., 722.  
bromo-, and *mono*- and *di*-nitro- (WURSTER and RIEDEL), 1880, A., 109.  
nitroso-, constitution of (RIEDEL), 1880, A., 386.  
hydrochloride of (WURSTER and RIEDEL), 1880, A., 109.
- Dimethyl-*p*-toluidine**, methiodide of (THOMSEN), 1878, A., 218.
- Dimethyltoluidines**, action of benzaldehyde on (FISCHER), 1880, A., 636.  
colouring matters from (MONNET, REVERDIN and NÖLTING), 1879, A., 310.  
ferro- and ferri-cyanides of (WURSTER and ROSER), 1880, A., 98.
- Dimethyl-*o*-toluidinesulphonic acid**, and its salts (MICHLER and SAMPAIO), 1882, A., 177.
- Dimethyltropine** (LADENBURG), 1882, A., 216.  
hydroxide, iodide and platinochloride of (MERLING), 1882, A., 217.
- $\alpha$ -Dimethyluric acid** (MABERY and HILL), 1879, A., 48; 1881, A., 39.
- Dimyrcylamine** (v. PIEVERLING), 1877, i., 587.
- Dinaphthalene oxide**. See Dinaphthylene oxide.
- Dinaphthalenephosphinic acid** (KELBE), 1879, A., 67.
- Dinaphthol** (KAUFFMANN), 1882, A., 1068.
- $\beta$ -Dinaphthyl** (*isodinaphthyl*) (SMITH), 1876, ii., 30; 1880, A., 262.  
vapour-density of (KNECHT), 1880, A., 679.  
action of chlorine and bromine on (SMITH and POYNTING), 1874, 854.
- $\beta$ -Dinaphthyl** (*isodinaphthyl*), cyanogen derivative of (SMITH), 1877, ii., 558.  
nitro- (SMITH), 1877, ii., 558.
- Dinaphthyls**, three isomeric, preparation and properties of (SMITH), 1877, ii., 559; 1879, T., 224.  
structure of the (SMITH), 1877, ii., 563.  
vapour-densities of the (SMITH), 1879, T., 226; A., 537.  
reactions of, with antimony and bismuth trichlorides (SMITH), 1879, A., 831.
- Dinaphthyl ketones** (KOLLARITS and MERZ), 1873, 1035; (MERZ and GRUCAREVIČ), 1873, 1233; (HAUSMANN), 1877, i., 317.  
vapour-density of (KNECHT), 1880, A., 679.
- Dinaphthylacetylene** (GRABOWSKI), 1878, A., 509.
- Di- $\beta$ -naphthyl-*m*-diamidobenzene**. See *m*-Phenylenedi- $\beta$ -naphthylidiamine.
- Di- $\alpha$ -naphthylamine** (LANDSHOFF), 1878, A., 587.
- Di- $\beta$ -naphthylamine** (MERZ and WEITH), 1880, A., 813; 1882, A., 179.
- Di- $\alpha$ - and - $\beta$ -naphthylamines** (CALM), 1882, A., 972.
- Dinaphthylanthrylene** (GRABOWSKI), 1878, A., 509.
- Di- $\alpha$ -naphthylcarbamide** (PAGLIANI), 1879, A., 723.
- Dinaphthylidiquinhydrone** (STENHOUSE and GROVES), 1878, T., 417.
- Dinaphthyl-diquinol**, and -diquinone (STENHOUSE and GROVES), 1878, T., 418.
- $\beta\beta$ -Dinaphthyldisulphonic acids** (SMITH), 1877, ii., 557.
- Dinaphthylene diketone** ("dicarbonyl-dinaphthylene") and its halogen derivatives (HÖNIG), 1881, A., 280.
- Dinaphthylenic glycol**, and its derivatives (ROUSSEAU), 1882, A., 735, 1211, 1299; (KAUFFMANN), 1882, A., 1068.
- Di- $\alpha$ - and - $\beta$ -naphthylenic oxides**, and their derivatives (MERZ and WEITH), 1881, A., 264; (KNECHT and UNZEITIG), 1881, A., 281; (DIANIN), 1882, A., 623; (v. NIEDERHÄUSERN), 1882, A., 1211.
- Dinaphthylethane**,  $\omega$ -trichloro-, and  $\omega$ -trichlorotetranitro- (GRABOWSKI), 1873, 891; 1878, A., 508.
- Di- $\alpha$ - and - $\beta$ -naphthylethylene**,  $\omega$ -dichloro-, and  $\omega$ -dichlorotetranitro- (GRABOWSKI), 1873, 891; 1878, A., 509.  
dioxide (KOELLE), 1881, A., 177.

- Di- $\alpha$ -naphthylethylenediamine** (REUTER), 1875, 649.
- Di- $\alpha$ -naphthyl oxide** (*naphthyl ether*) (MERZ and WEITH), 1881, A., 264.
- Di- $\beta$ -naphthyl oxide** (MERZ and WEITH), 1881, A., 264; (GLADSTONE and TRIBE), 1882, T., 16; (NIETZKI), 1882, A., 736.
- Di- $\alpha$ - and - $\beta$ -naphthyl sulphides** (ARMSTRONG), 1874, 803.
- "Dinaphthylimide, nitramido-"** See Diazo-compound of  $\alpha$ -nitronaphthylamine under Azo.
- Di- $\alpha$ -naphthylmethane** and its derivatives (GRABOWSKI), 1875, 455.
- Di- $\beta$ -naphthylmethane** (RICHTER), 1881, A., 281.
- Di- $\beta$ -naphthylmethylenic dioxide** (KOELE), 1881, A., 177.
- Dinaphthyloxidedisulphonic acid** (CLAUS and ZIMMERMANN), 1881, A., 914.
- $\beta\beta$ -Dinaphthylsulphone** (*sulphonaphthalide*) (CLEVE), 1876, ii., 81; 1878, A., 154.
- $\beta\beta$ -Dinaphthyl-mono-, -di-, and -tetra-sulphonic acids** and their salts (SMITH and TAKAMATSU), 1881, T., 551.
- Di- $\alpha$ -naphthylthiocarbamide** (BERGER), 1880, A., 245.
- Di- $\beta$ -naphthylthiocarbamide** (COSINER), 1881, A., 606.
- Dinas bricks** and their raw material, pyrometric examination of (BISCHOF), 1873, 192.
- crystals, so-called plastic (BISCHOF), 1877, i., 354.
- stone, very refractory German (ANON.), 1874, 100.
- Diocetyl** (*hexacalcene*) (EICHLER), 1880, A., 229.
- Diocetylacetic acid.** See *iso*Stearic acid.
- Diocetylacetone.** See Methyl heptadecyl ketone.
- Diocetyl oxide and sulphide** (MÖSLINGER), 1876, ii., 393.
- Diocetyl imide, imido-** (ERLENMEYER and SIGEL), 1875, 1018.
- Diocetylmalonic acid** (CONRAD and BISCHOFF), 1880, A., 628.
- Dionæa**, electromotive properties of the leaf of (BURDON SANDERSON), 1874, 427; 1882, A., 638.
- Diopside** (DOELTER), 1879, A., 442.
- artificial (GRUNER), 1881, A., 694.
- formed in a Bessemer converter (MASKELYNE), 1879, A., 513.
- Dioptase** (VOM RATH), 1881, A., 551.
- on chrysocolla, from Peru (BURGHARDT), 1879, A., 30.
- "Diorcoxydiacetic acid."** See Tolylenediglycollic acid.
- Diorite** from Diez in the Rupbachthal, Nassau, composition of (HILGER), 1880, A., 857.
- quartzose, from Minnesota (STRENG and KLOOS), 1877, ii., 580, 723.
- Diosmose.** See Osmose under Diffusion.
- Dioxaethyline** (WALLACH and OPPENHEIM), 1878, A., 55.
- Dioxethenetoluidine.** See Dihydroxydiethyl-*p*-toluidine.
- Dioxides**, solid hydrated, compounds of, with acids, salts, and alkalis (VAN BEMMELEN), 1882, A., 571.
- Dioxindole** (*hydroisatin*), constitution of (V. BAEYER), 1879, A., 937.
- action of ammonia on (V. SOMMARUGA), 1879, A., 718.
- "Dioxyazobenzene, trinitro-"** (PETRIEFF), 1873, 1028.
- Dioxybisdimethylaniline.** See Tetramethyl-diaminodiphenylic dioxide.
- "Dioxymaleic acid,"** preparation and properties of (BOURGOIN), 1875, 356.
- Dioxyretistene.** See Retenequinone.
- Dipentadecyl ketone** (*palmitone*) (HERTZ), 1877, ii., 425.
- Dipentene.** See under Terpenes.
- Diphenetol, diamido-** See Diethoxybenzidine.
- Diphenic acid** (*diphenyl-*o*-carboxylic acid*) (FITTIG and OSTERMAYER), 1873, 177, 892; (HUMMEL), 1879, A., 165.
- m*-diamido- (STRUVE), 1877, ii., 902; (SCHULTZ), 1878, A., 511; 1879, A., 538, 653; 1880, A., 814; (HUMMEL), 1879, A., 165.
- $\alpha$ -dinitro- (HUMMEL), 1879, A., 165.
- $\beta$ -dinitro-, and its salts (SCHULTZ), 1880, A., 814.
- iso*Diphenic acid (*diphenyl-*om*-dicarboxylic acid*) and its salts (FITTIG and GEBHARD), 1879, A., 166; (FITTIG and LIEPMANN), 1880, A., 401.
- constitution of (FITTIG and LIEPMANN), 1879, A., 536.
- Diphenic anhydride** (GRAEBE and MENSCHING), 1880, A., 812.
- melting point of (ANSCHÜTZ), 1878, A., 136.
- compound of, with resorcinol, and phthalein of (GRAEBE and MENSCHING), 1880, A., 812.
- Diphenic chloride** (GRAEBE and MENSCHING), 1880, A., 812.
- op*-( $\delta$ )-**Diphenol** (LINCKE), 1874, 373; (SCHMIDT and SCHULTZ), 1879, A., 651.



- op*-( $\delta$ )-Diphenol from diphenylene, and phenol-*p*-sulphonic acid (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 912.
- pp*-( $\gamma$ )-Diphenol (SCHMIDT and SCHULTZ), 1879, A., 651; (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 605.
- from benzidine, and diphenyldisulphonic and dioxypyphenylbenzoic acids (SCHMIDT and SCHULTZ), 1881, A., 910.
- oxidation of (MAGATTI), 1880, A., 250.
- tetrabromo-, and its preparation and oxidation (MAGATTI), 1880, A., 643.
- Diphenols [m.p.s. 123° and 190°] (BARTH and SCHREDER), 1879, A., 64.
- Diphenolcresolmethane (*leucorosolic acid*) and tetrabromo- (GRAEBE and CARO), 1876, i., 590; (ZULKOWSKI), 1879, A., 59.
- Diphenolethane. See Dihydroxydiphenylethane.
- Diphenolquinone. See *pp*-Diphenol.
- "Diphenolquinone, tetrachloro-." See Diphenylenic dioxide, tetrachloro-.
- $\alpha$ -Diphenolsulphonic acid. See Dihydroxydiphenyldisulphonic acid.
- Diphenoxydiethylamine hydrobromide and dinitro- (WEDDIGE), 1881, A., 1137.
- Diphenoxyethane, nitro- (WEDDIGE), 1881, A., 1137.
- dinitro- (WEDDIGE), 1880, A., 316.
- Diphenyl (LATSCHNOFF), 1873, 749; (GRAEBE), 1874, 471; (SCHULTZ), 1875, 148; 1876, ii., 197; (LÜDDENS), 1875, 1258; (GOLDSCHMIEDT), 1878, A., 155; (CARNELLEY), 1880, T., 705; (SMITH), 1880, A., 125, 262.
- in coal tar oil (BÜCHNER), 1875, 637.
- new method of preparing (CHRISTOMANOS), 1876, i., 914; (SMITH), 1876, ii., 30.
- formation of, by distilling acetanilide with sodium phenate (WEITH), 1873, 1240.
- production of, from phenanthraquinone (GRAEBE), 1873, 895.
- purification of (SMITH) 1876, ii., 30.
- action of heat on a mixture of ethylene and (BARBER), 1874, 1092.
- action of methylal on (WEILER), 1875, 151.
- chlorination of (KRAMERS), 1877, ii., 898.
- compound of, with formaldehyde (v. BAeyer), 1873, 885.
- Diphenyl, compounds of (SCHULTZ), 1874, 468; 1875, 148; (OSTEN), 1874, 580; (DOEBNER), 1874, 892.
- formation of, within the molecule (GRAEBE), 1875, 274.
- constitution of (SCHULTZ), 1881, A., 907.
- and diphenylene-compounds, differences between the boiling points of (GRAEBE), 1875, 454.
- colour reaction with antimony and bismuth trichlorides (SMITH), 1879, A., 831.
- Diphenyl, *p*-amido- (*xenylamine*) (SCHULTZ), 1874, 468; (OSTEN), 1874, 580.
- derivatives of (ZIMMERMANN), 1881, A., 175.
- op*-diamido-. See Diphenylene.
- pp*-diamido-. See Benzidine.
- o*-bromo- (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 912.
- p*-bromo-, and *pp*-dibromo- (SCHULTZ), 1875, 148.
- p*-bromo-*p*-nitro- (SCHULTZ), 1874, 468; 1875, 149.
- isobromonitro- (SCHULTZ), 1875, 149; (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 911.
- p*-chloro- (SCHULTZ), 1874, 468; 1875, 149.
- perchloro- (MERZ and WEITH), 1878, A., 76.
- mono- and di-cyano- (DOEBNER), 1874, 893.
- imido-. See Carbazole.
- o*-nitro- (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 912.
- p*-nitro- (SCHULTZ), 1874, 468; 1875, 149; (OSTEN), 1874, 580.
- o*- and *p*-nitro- (SCHULTZ and STRASSER), 1881, A., 604.
- op*-dinitro- (SCHULTZ), 1875, 150; (SCHULTZ and STRASSER), 1881, A., 604; (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 911.
- pp*-dinitro- (SCHULTZ), 1874, 468; 1875, 149; (SCHULTZ and STRASSER), 1881, A., 604.
- pp*-nitramido- (SCHULTZ), 1875, 150.
- isonitramido- (SCHULTZ), 1874, 468; 1875, 150; (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 911.
- azo-derivatives of (WALI), 1876, ii., 417; 1877, ii., 341.
- Diphenyl bases (SCHMIDT and SCHULTZ), 1879, A., 252, 652; (SCHULTZ), 1881, A., 907.
- isomeric, transformation of certain aromatic hydrazo-compounds into (SCHULTZ), 1882, A., 1062.

**Diphenyl ketone.** See Benzophenone.  
**Diphenylmercaptan.** See Phenylphenyl mercaptan.

*p*-amido- (GABRIEL and DAMBERGIS), 1880, A., 891.

**Diphenyl phenyl ketone.** See Diphenylbenzophenone.

**Diphenyl tetramethylphenylene diketone** (*durenyldibenzoyl*) (FRIEDEL, CRAFTS and ADOR), 1879, A., 713.

**Diphenylacetamide**, action of phosphorus pentachloride on (WALLACH), 1882, A., 394.

*s*-**Diphenylacetamidine** (*ethenyldiphenyldiamine*) (BIEDERMANN), 1874, 808; (WALLACH), 1879, A., 313; 1882, A., 958; (WALLACH and BLEIBTREU), 1879, A., 786.

*as*-**Diphenylacetamidine** and its salts (BERNTHSEN), 1878, A., 789.

*di*bromo- (DENNSTEDT), 1880, A., 634.

**Diphenylacetic acid** (SYMONS and ZINCKE), 1874, 162.

synthesis of (FRIEDEL and BALSOHN), 1881, A., 273.

**Diphenylacetylene** (*tolane*), formation of, by distillation of barium benzoate and thiocyanate (PEAN-KECH), 1873, 363.

oxidation of (LIEBERMANN and HOMER), 1880, A., 259.

*di*bromide and *tetrachloride* (LIEBERMANN and HOMER), 1880, A., 259.

$\alpha$ - and  $\beta$ -*di*- and *tetra*-chlorides (HANNHART), 1882, A., 1103.

*di*iodide (FISCHER), 1882, A., 521.

"**Diphenylaldehyde**" (BREUER and ZINCKE), 1880, A., 118.

**Diphenylamidobenzamidine** (*carbobotriphenyltriamine*) (WEITH), 1877, ii., 448.

preparation of (MICHLER and WALTER), 1882, A., 180.

synthesis of (WEITH), 1879, A., 462.

**Diphenyldiamidotriphenyl-carbinol** and -methane (MELDOLA), 1882, T., 191.

**Diphenylamine** (MERZ and WEITH), 1874, 375; 1880, A., 813; (WALLACH and GOSSMANN), 1878, A., 670; (BERNTHSEN), 1878, A., 790. formation of, by the action of bromobenzene on aniline (MERZ and WEITH), 1873, 73.

action of benzylic chloride on (MELDOLA), 1882, T., 198; A., 502.

oil product obtained by the action of benzylic chloride on (MELDOLA), 1882, T., 187.

**Diphenylamine**, action of hydrogen dioxide on (LEEDS), 1882, A., 502. action of oxalic acid on (GIRARD and WILLM), 1876, ii., 99.

as a test for nitrous and nitric acids (KOPP), 1873, 91; (MARTIN), 1877, ii., 918.

derivatives of (GNEHM), 1876, i., 83, 265; (GNEHM and WYSS), 1878, A., 52; (LELLMANN), 1882, A., 1059.

**Diphenylamine**, *pp*-*di*amido-, and its salts (NIETZKI), 1878, A., 792.

*tetramido*- (GNEHM and WYSS), 1878, A., 53.

*di*bromo- (LELLMANN), 1882, A., 1060.

*hexabromo*- (GNEHM), 1876, i., 83.

*p*-bromo-2:4-dinitro- (*p*-bromophenyl-2:4-dinitraniline) (WILLGERODT), 1878, A., 570.

*di*bromonitranitro- (GNEHM), 1876, i., 83.

*tri*bromodinitro- (GNEHM and WYSS), 1878, A., 53.

*p*-nitro- (WITT), 1878, T., 205; (LELLMANN), 1882, A., 1059.

*dinitro*- (WITT), 1878, T., 208.

*as*-*dinitro*- (HEPP), 1879, A., 51.

2:4-dinitro- (WILLGERODT), 1878, A., 141, 570; 1882, A., 492.

*trinitro*-. See Phenylnitraniline, *dinitro*-.

*tetranitro*- (WITT), 1878, T., 209; (GNEHM and WYSS), 1878, A., 52.

See also Pierylutraniline.

*hexanitro*-. See Diptyrylamine.

**Diphenylamine-acraldehyde** (LEEDS), 1882, A., 1197.

**Diphenylamine-blue** (BRUNNER and BRANDENBURG), 1878, A., 313; (HASSENCAMP), 1880, A., 75.

**Diphenylaminedisulphonic acid** (MERZ and WEITH), 1873, 74; 1874, 375.

**Diphenylamine-green**, and its optical properties, and its sulphonic acid (MELDOLA), 1882, T., 189.

**Diphenylaminesulphonic acid** (MERZ and WEITH), 1873, 74; 1874, 375.

**Diphenylantraquinone** (FITTIG and OSTERMAYER), 1873, 894.

**Diphenylarsine bromide** (LA COSTE and MICHAELIS), 1879, A., 162.

*mono*- and *tri*-chlorides (MICHAELIS), 1877, i., 311.

*tri*chloride, and oxychloride (LA COSTE and MICHAELIS), 1879, A., 162; 1880, A., 396.

**Diphenylarsinic acid** and its salts (MICHAELIS), 1877, i., 311; (LA COSTE and MICHAELIS), 1879, A., 162; 1880, A., 397.

- Diphenylarsinic acid**, action of, on animals (SCHULZ), 1879, A., 476.
- Diphenylazo-**. See under Azo-.
- Diphenylbenzamide**. See Benzodiphenylamide.
- s-Diphenylbenzamidine** (LEO), 1878, A., 409; (BERNTHSEN), 1878, A., 790; (DOEBNER), 1882, A., 957.
- as-Diphenylbenzamidine** and its salts (BERNTHSEN), 1877, ii., 886; 1878, A., 788.
- thiocyanate (BERNTHSEN), 1878, A., 790.
- p-Diphenylbenzene** (RIESE), 1873, 63; (SCHULTZ), 1878, 888; (BARTH and SCHREDER), 1879, A., 66; (SCHMIDT and SCHULTZ), 1879, A., 163; 1881, A., 435; (MEYER and ROSICKI), 1879, A., 466; (CARNEILEY), 1880, T., 705, 712.
- perchlorination of (MERZ, ZETTER, RUOFF and MOË), 1879, A., 721.
- trinitro-* (SCHMIDT and SCHULTZ), 1879, A., 163; 1881, A., 435.
- isoDiphenylbenzene** (SCHMIDT and SCHULTZ), 1881, A., 435.
- Diphenylbenzenylamidine**. See Diphenylbenzamidine.
- isoDiphenylbenzenylmethylamidine**. See Diphenylmethylbenzamidine.
- isoDiphenylbenzenylnitramidine**. See Diphenylnitrosobenzamidine.
- Diphenylbenzophenone** (*diphenyl phenyl ketone*), formation of, by oxidation of diphenyldiphenylmethane (WEILER), 1875, 152.
- Diphenylbenzylamine** (BERNTHSEN and TROMPETTER), 1879, A., 147; (MELDOLA), 1882, A., 502.
- Diphenylbenzylethyl- $\psi$ -thiocarbamide** and its hydrochloride (BERNTHSEN and FRIESE), 1882, A., 967.
- Diphenylbiuret** (WEITH), 1878, A., 141.
- di-p-bromo-* (DENNSTEDT), 1880, A., 633.
- Diphenylbutane** (THÖRNER and ZINCKE), 1879, A., 317.
- Diphenylbutanedicarboxylic acid** (*o-ethylenbenzylcarbonic acid*), and anhydride, and *di-bromo-* (GABRIEL and MICHAEL), 1878, A., 428.
- s-Diphenylcarbamide** (*carbanilide*) (LOSSEN), 1874, 254, 1169; (BLANKENHORN), 1878, A., 215; (LANGE), 1879, A., 651; (BÖTTINGER), 1880, A., 622.
- preparation of (WEITH), 1876, ii., 639.
- formation of, from dibenzhydroxamic acid (ROTHERMUND), 1875, 768.
- action of chloro-*a*-dinitrobenzene on (WILLGERODT), 1878, A., 141.
- s-Diphenylcarbamide** (*carbanilide*), action of nitric acid on (FLEISCHER and NEMES), 1877, ii., 886.
- s-Diphenylcarbamide** (*carbanilide*), *di-p-bromo-* (SARATW), 1882, A., 609.
- di-p-chloro-*, action of iodine on an alcoholic solution of (BEILSTEIN and KURBATOFF), 1874, 1097.
- m-nitro-*, formation of, by oxidation of *m-nitrodiphenylthiocarbamide* (BRÜCKNER), 1875, 166.
- di-m-nitro-* (BRÜCKNER), 1875, 166.
- 2:4-tetranitro-*, constitution of (LOSANITSCH), 1880, A., 812.
- action of potash on (LOSANITSCH), 1879, A., 67.
- Diphenylcarbinol**. See Benzhydrol.
- Diphenylcarbinolcarboxylic acid**, *di-chloro-* (v. BAeyer), 1880, A., 654.
- Diphenylcarbinyl acetate** (FRIEDEL and BALSOHN), 1880, A., 559.
- Diphenyl-o-carboxylamide** (*phenylbenzamide*), action of sulphur on (v. HOFMANN), 1880, A., 386.
- Diphenyl-o-carboxylic acid** (*phenylbenzoic acid*) and its salts (FITTIG and OSTERMAYER), 1873, 893; (SCHMITZ), 1879, A., 164.
- formation of diphenylene ketone from (FITTIG), 1873, 750.
- nitro-* (SCHMITZ), 1879, A., 164; (SCHMIDT and SCHULTZ), 1881, A., 435.
- Diphenyl-m-carboxylic acid** (SCHMIDT and SCHULTZ), 1879, A., 163.
- Diphenyl-p-carboxylic acid** (SCHULTZ), 1875, 149.
- 3:4-dinitro-*, and its salts (STRASSER and SCHULTZ), 1882, A., 521.
- Diphenyltrichlorethane**, formation of (v. BAeyer), 1875, 148.
- di-bromo-*, *di-bromodinitro-*, *dichloro-*, and *dichlorodinitro-* (ZEIDLER), 1875, 148.
- Diphenyltrichlorethylene**, *di-bromo-* (ZEIDLER), 1875, 148.
- Diphenyl-dichlorobenzylamine** (*dichlorobenzenyldiphenylamine*) (CLAUS), 1882, A., 178.
- Diphenylchlorophosphine** and its derivatives (MICHAELIS), 1877, ii., 453; (MICHAELIS and LINK), 1882, A., 306.
- Diphenylcyanamide** (*carbodiphenyl-imide*) (WEITH), 1874, 480, 1170.
- formation of (MERZ and WEITH), 1877, ii., 886.
- reactions of (WEITH), 1876, ii., 419.

- Diphenyldiacetylene**, preparation of, and its *o*-diamido- and *o*-nitro-compounds and their derivatives (v. BAAYER and LANDSBERG), 1882, A., 622.  
*o*-dinitro- (v. BAAYER), 1882, A., 619; (v. BAAYER and LANDSBERG), 1882, A., 972.
- Diphenyldiazobenzenecarbamide**. See Benzeneazodiphenylcarbamideazo-benzene under Azo.
- Diphenyldi-*o*-carboxylic acid**. See Diphenic acid.
- Diphenyl-*om*-dicarboxylic acid**. See *iso*Diphenic acid.
- Diphenyldiethylamine**, and its hydrochloride (SPICA), 1880, A., 241.
- Diphenyldiethylarsonium iodide** (LA COSTE and MICHAELIS), 1879, A., 162.
- Diphenyldiethylcarbamide** (SPICA), 1880, A., 242.
- Diphenyldiethylenediamine** (*diphenyl-piperazine*), dinitroso- (MORLEY), 1880, A., 112.
- Diphenyldiethyltetrazone** (FISCHER and EHRHARDT), 1878, A., 573; 1880, A., 242.
- Diphenyldiethyl- $\psi$ -thiocarbamide**, and its hydriodide (BERNTSEN and FRIESE), 1882, A., 966.
- $\alpha$ -Diphenyldiguamide** (BAMBERGER), 1881, A., 43.
- Diphenyldimethyl-arsonium and -phosphonium iodides** (MICHAELIS and LINK), 1882, A., 305.
- Diphenyldimethylcarbamide** (MICHLER and ZIMMERMANN), 1879, A., 935.
- Diphenyldimethylethane**, formation of (ENGLER and BETHGE), 1875, 65.
- Diphenyldimethylmethane**, formation of methylantracene from (WEILER), 1875, 151.
- Diphenyldimethyltetrazone** (FISCHER), 1878, A., 312.
- Diphenyldiphenylthiocarbamide** (ZIMMERMANN), 1881, A., 175.
- "Diphenyldisulphacetic acid."** See Diphenylenebisthioglycollic acid.
- Diphenyldisulphonamide** (GABRIEL and DEUTSCH), 1880, A., 477.
- Diphenyldisulphonic acid**, and its derivatives, constitution of (DOEBNER), 1876, i., 932.  
*p*-nitro- (GABRIEL and DANBERGIS), 1880, A., 890.
- Diphenyldisulphonic chloride** (GABRIEL and DEUTSCH), 1880, A., 477.
- Diphenylene ketone** (*carbodiphenylene*) (FITTIG and OSTERMAYER), 1873, 892; (FRIEDLÄNDER), 1877, ii., 492; (SALZMANN and WICHELHAUS), 1878, A., 79; (FITTIG and GEBHARD), 1878, A., 431; 1879, A., 165; (SCHMITZ), 1879, A., 164; (FITTIG and LIEPMANN), 1879, A., 536; (GRAEBE and MENSCHING), 1880, A., 812.
- Diphenylene ketone** (*carbodiphenylene*), from anthraquinone (ANSCHÜTZ), 1878, A., 983.  
 formation of, from phenylbenzoic acid and a new hydrocarbon from (FITTIG), 1873, 750.  
 products of the decomposition of (GRAEBE), 1875, 457.  
 2-*mono*-, and 2:2'-*di*-nitro- (SCHULTZ), 1880, A., 814.
- Diphenylene ketone oxide** (*carbonyl-diphenylene oxide*; *xanthone*) (MERZ and WEITH), 1881, A., 264.
- Diphenylene mercaptan** (GABRIEL and DEUTSCH), 1880, A., 476.
- Diphenyleneacetic acid** (FRIEDLÄNDER), 1877, ii., 492.
- Diphenylenebisthioglycollic acid** ("*diphenyldisulphacetic acid*") (GABRIEL and DEUTSCH), 1880, A., 477.
- Diphenylenecarbinol**. See Fluorenic alcohol.
- Diphenyleneglycollic acid** (*hydroxy-diphenyleneacetic acid*) (v. BAAYER and FRIEDLÄNDER), 1877, ii., 336; (FRIEDLÄNDER), 1877, ii., 492.  
*di*bromo- (FRIEDLÄNDER), 1877, ii., 493.
- Diphenyleneketonecarboxylic acid** (FITTIG and GEBHARD), 1879, A., 166; (FITTIG and LIEPMANN), 1880, A., 401.  
 nitro- (FITTIG and LIEPMANN), 1880, A., 401.
- o*-Diphenylenemethane**. See Fluorene.
- Diphenylenemethanes**,  $\gamma$ - and  $\delta$ - (*methyl-enediphenylene*), constitution and properties of (CARNELLEY), 1880, T., 701.
- $\gamma$ -Diphenylenemethane**, *di*bromo- (CARNELLEY), 1880, T., 710.
- Diphenylenemethane oxide** (MERZ and WEITH), 1881, A., 264; (v. NIEDERHÄUSERN), 1882, A., 1212; (GRAEBE and EBRARD), 1882, A., 1302.
- Diphenylenemethanequinones**,  $\gamma$ - and  $\delta$ - (CARNELLEY), 1880, T., 709.
- Diphenylenephénylmethane** (v. HEMILIAN), 1875, 153; 1878, A., 431, 738; 1881, A., 434; (E. and O. FISCHER), 1879, A., 384.
- Diphenylenequinone**, *tet*riodo- (KAEMMERER and BENZINGER), 1878, A., 574.



- Diphenylenetolylmethane** (v. HEMILIAN), 1878, A., 431; 1881, A., 434.
- Diphenylenic oxide** (v. NIEDERHÄUSERN), 1882, A., 1211.  
a new method of preparing (GRAEBE), 1874, 797.
- Diphenylenic dioxide, tetrachloro-** ("tetrachlorodiphenolquinone") (MAGATTI), 1880, A., 644.
- Diphenylenic sulphide** (GRAEBE), 1874, 469.
- Diphenylenic disulphide** (GRAEBE), 1874, 469; 1876, i., 578; (FRIEDEL and CRAFTS), 1878, A., 670.
- s-Diphenylethane (dibenzyl)** (COUNCLER), 1878, A., 21.  
new method of forming (DA SILVA), 1880, A., 259.  
crystalline form of (VOM RATH), 1873, 383.  
action of heat on (BARBIER), 1875, 62.  
action of chlorine on (KADE), 1880, A., 46.  
perchlorination of (MERZ, ZETTER, RUOFF and MOE), 1879, A., 721.  
action of heated lead oxide on (BEHR and VAN DORP), 1873, 1135.  
action of sulphur on (RADZISZEWSKI), 1875, 1190.  
and its derivatives, oxidation of (LEPPERT), 1876, i., 704.  
formation of toluene from (BARBIER), 1877, i., 74.  
products accompanying, in the aluminium chloride reaction (DA SILVA), 1881, A., 913.  
*p*-dichloro- (KADE), 1880, A., 46.
- α-Diphenylethane** (GOLDSCHMIEDT), 1874, 370; (THÖRNER and ZINCKE), 1879, A., 317.  
*ω*-tribromo- (GOLDSCHMIEDT), 1874, 150.  
*ω*-trichloro-. See Diphenyltrichloroethane.
- dicyano- (dibenzylene dicyanide)** (REIMER), 1882, A., 170.
- Diphenylethane-*o*-carboxylic acid (o-dibenzylcarboxylic acid)** (GABRIEL and MICHAEL), 1878, A., 735.
- s-Diphenylethanedisulphonic acid (dibenzylsulphonic acid)** (KADE), 1873, 1240; 1874, 695.
- Diphenylethanetricarboxylic acid, and its salts** (HAISS), 1882, A., 1071.
- Diphenylethyl methyl ketone** (THÖRNER and ZINCKE), 1879, A., 317.
- Diphenylethylarsine** (LA COSTE and MICHAELIS), 1879, A., 162.
- s-Diphenylethylene**. See Stilbene.
- as-Diphenylethylene** (HEPP), 1875, 361; (DEMOLE), 1880, A., 158.  
*ω*-dibromo- and *ω*-dichloro- (GOLDSCHMIEDT), 1874, 150.  
*ω*-trichloro-. See Diphenyltrichloroethylene.
- Diphenylethylenediamine**, preparation of, and action of nitrous acid on (MORLEY), 1880, A., 112.  
action of carbonic chloride on (MICHLER and KELLER), 1882, A., 182.
- Diphenylethylenediketonedio-carboxylic acid** (GABRIEL and MICHAEL), 1878, A., 230.
- Diphenylethylenediketonedio-carboxylic anhydride** (GABRIEL and MICHAEL), 1878, A., 427.
- Diphenylethylenedinitrosamine** (MORLEY), 1880, A., 112.
- Diphenylethylenedisulphone** (OTTO), 1880, A., 811.
- Diphenylethylene-ψ-thiocarbamide** (*ethylene phenylimidophenylthiocarbamate*) (WILL), 1881, A., 906; 1882, A., 723.  
action of sulphuric acid on (WILL), 1882, A., 723.
- Diphenylethylphosphine** (MICHAELIS and LINK), 1882, A., 306.
- Diphenylethylphosphonium compounds** (MICHAELIS and LINK), 1882, A., 306.
- Diphenylethyl-ψ-thiocarbamide (ethylthiocarbanilide)** and its salts (WILL), 1881, A., 906; (KATHE), 1882, A., 166; (BERNTSEN and FRIESE), 1882, A., 966.
- Diphenylformamidine (methenyldiphenylidiamine)** (WEITH), 1876, ii., 205; (WALLACH), 1882, A., 958.  
new method of preparing (LELMANN), 1882, A., 503.
- Diphenylfumaric acid** (RÜGHEIMER), 1882, A., 1298.
- Diphenylfumaric anhydride and imide** (REIMER), 1881, A., 47.
- Diphenylguanidine** (WEITH and SCHROEDER), 1875, 85; (v. HOFMANN), 1875, 87; (STEINER), 1875, 882.  
formation of, by the action of aniline on mercuric fulminate (STEINER), 1875, 165.  
action of phenylthiocarbimide on (KATHE), 1879, A., 804.  
*m*-mono- and -*di*-nitro- (BRÜCKNER), 1875, 166.
- s-Diphenylhydrazine (hydrazobenzene)**, preparation of (MOLTSCHANOWSKI), 1882, A., 965.

- s-Diphenylhydrazine** (*hydrazobenzene*), action of acetic anhydride on (GRIESS), 1879, A., 630.  
*m*-dibromo- and *m*- and *p*-diiodo- (GABRIEL), 1877, i., 307.  
*p*-dibromo- (WERIGE), 1873, 384.  
*p*-dichloro- (v. HOFMANN and GEYGER), 1873, 169.  
*trinitro*- (FISCHER), 1878, A., 309.  
**as-Diphenylhydrazine** (WITT), 1878, T., 203; (FISCHER), 1878, A., 313.  
**s-Diphenylhydrazinedi-*m*-sulphonamide** (MAHRENHOLTZ and GILBERT), 1880, A., 805.  
**s-Diphenylhydrazinedi-*m*-sulphonic acid** and its salts (LIMPRICHT), 1878, A., 722; 1882, A., 517; (MAHRENHOLTZ and GILBERT), 1880, A., 805; (BRUNNEMANN), 1880, A., 808.  
*di*- and *tetra*-bromo-, and their salts and diazo-compounds (JORDAN), 1880, A., 808.  
***m*-Diphenylhydrazinetetrasulphonic acid** and its salts (LIMPRICHT), 1881, A., 903.  
**Diphenylhydrazinetetrasulphonic acids**,  $\alpha$ - and  $\beta$ -, and their salts (REICHE), 1880, A., 806.  
**Diphenylic oxide** (*phenyl ether*) (MERZ and WEITH), 1881, A., 264; (GLADSTONE and TRIBE), 1882, T., 6; (v. NIEDERHÄUSERN), 1882, A., 1212.  
 2:4-*dinitro*- (WILLGERODT), 1879, A., 717; 1880, A., 642.  
 2:4:6-*trinitro*- (WILLGERODT), 1879, A., 923.  
**Diphenylic sulphide** (FRIEDEL and CRAFTS), 1878, A., 670; (GABRIEL and DEUTSCH), 1880, A., 476.  
 preparation of (GRAEBE and MANN), 1882, A., 1285.  
 action of nitric acid on (KRAFFT), 1874, 806.  
*p*-dibromo-, *p*-dichloro-, and *p*-diiodo- (KRAFFT), 1875, 153.  
 4-dichloro-2-dinitro- and 2:4-*tetra*-nitro- (BEILSTEIN and KURBATOFF), 1878, A., 139; 1879, A., 230.  
 2:4-*tetranitro*- (WILLGERODT), 1879, A., 714.  
*disulphide* (FRIEDEL and CRAFTS), 1878, A., 670; (GABRIEL and DEUTSCH), 1880, A., 476.  
 formation of (SCHILLER and OTTO), 1877, i., 306.  
 action of alcoholic potash on (SCHILLER and OTTO), 1877, i., 463.  
**Diphenylic disulphide**, method of converting into benzene hydrosulphide (OTTO), 1877, ii., 749.  
*di*-*o*-amido- and its hydrochloride (v. HOFMANN), 1880, A., 386.  
 thiocyanate (GABRIEL and DEUTSCH), 1880, A., 477.  
**Diphenyldiimidonaphthol** (*phenyl-amido- $\beta$ -naphthaquinone, anilide of*) (GÖES), 1880, A., 399.  
**Diphenylene** (*op-diamidodiphenyl*) (SCHULTZ), 1876, ii., 197; (SCHMIDT and SCHULTZ), 1879, A., 252, 652; (SCHULTZ and STRASSER), 1881, A., 604; 1882, A., 521; (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 911.  
 preparation of (SCHMIDT and SCHULTZ), 1881, A., 909.  
 and an isomeride of the same, new method of preparing (SCHULTZ and STRASSER), 1882, A., 521.  
 action of nitric acid on (SCHULTZ and STRASSER), 1881, A., 604.  
**Diphenylmaleic acid**. See Stilbenedicarboxylic acid.  
**Diphenylmethane** (FITTIG), 1873, 755; (FRIEDEL and CRAFTS), 1882, A., 621.  
 synthesis of (MEYER and WURSTER), 1873, 1225.  
 action of heat on (BARBIER), 1875, 254; (GRAEBE), 1875, 276.  
 action of bromine on (FRIEDEL and BALSOHN), 1880, A., 558.  
 nitration of (STAEDEL and PRAETORIUS), 1878, A., 420; 1879, A., 319.  
 compound of, with formaldehyde (v. BAeyer), 1873, 885.  
 derivatives of (DOER), 1873, 170; (STAEDEL and PRAETORIUS), 1878, A., 671; (MELDOLA), 1882, T., 197.  
**Diphenylmethane, diamido-** (DOER), 1873, 170; (STAEDEL and PRAETORIUS), 1879, A., 319.  
 $\omega$ -bromo-, and its reactions (FRIEDEL and BALSOHN), 1880, A., 558; 1881, A., 279.  
 $\omega$ -dibromo- (FRIEDEL and BALSOHN), 1880, A., 558.  
*isodi*- and *tetra*-nitro- (DOER), 1873, 170.  
**Diphenylmethanedisulphonic acid** (DOER), 1873, 170.  
**Diphenylmethylamine**, action of heat on (GRAEBE), 1874, 481.  
*tribromo*- (GNEHM), 1876, i., 83.  
 bromodinitro- and 2:4-dinitro- (LEYMANN), 1882, A., 1057.

- Diphenylmethylarsine** (MICHAELIS and LINK), 1882, A., 305.
- Diphenylmethylbenzamidine** and its salts (BERNTSEN), 1878, A., 789.
- Diphenylmethylene-aniline** and *p*-toluidine (PAULY), 1877, ii., 614.
- Diphenylmethylenediamine** (LERMONTOFF), 1875, 145.
- Diphenylmethylethyl-arsonium** and -phosphonium iodides and their derivatives (MICHAELIS and LINK), 1882, A., 305.
- Diphenylmethylethane.** See Benzyltoluene.
- $\alpha$ -Diphenylmethylethane.** See Diphenylethane.
- Diphenylmethylphosphine** (MICHAELIS and LINK), 1882, A., 306.
- Diphenylmethylsemithiocarbazide** (FISCHER), 1878, A., 311.
- Diphenylmethyl- $\psi$ -thiocarbamide**, action of sulphuric acid on (WILL), 1882, A., 723.
- Diphenylmethylmethane** (LEHNE), 1880, A., 478; (v. HEMILIAN) 1880, A., 664; 1881, A., 434.
- Diphenylnitrosamine** (WITT), 1876, i., 267; 1878, T., 202.  
action of primary amines on (WITT), 1878, T., 203; A., 53.  
nitro-, and the action of bromine on (WITT), 1878, T., 206.
- Diphenylnitrosobenzamidine** (BERNTSEN), 1878, A., 789.
- Diphenyloxamide.** See Oxanilide.
- Diphenylparabanic acid** (LANDGREBE), 1878, A., 217.
- Diphenylphenylenemethane.** See Diphenylenephenylmethane.
- Diphenylphosphine** (MICHAELIS and GLEICHMANN), 1882, A., 1062.
- Diphenylphosphinic acid** (GÖTTER and MICHAELIS), 1878, A., 724.
- Diphenylphosphoric acid** (MICHAELIS and GRAEFF), 1876, i., 596.  
anilide of (WALLACH and HEYMER), 1876, i., 263.
- Diphenylphthalide**, and its derivatives (v. BAAYER), 1880, A., 650; (v. PECHMANN), 1882, A., 184.  
constitution of (v. BAAYER), 1879, A., 636.  
conversion of, into phenolphthalein (v. BAAYER), 1879, A., 637; 1880, A., 652.  
*diamido-* and *dinitro-* (v. BAAYER), 1880, A., 652.  
*dichloro-*. See Phenolphthalidein, *dichloro-*.
- See also Phthalophenone.
- Diphenylpiperazine.** See Diphenyldiethylenediamine.
- $\alpha\beta$ -Diphenylpropane**, synthesis of (DA SILVA), 1880, A., 259.
- Di- $\alpha$ -phenylpropionic acid** (*diphenylmethylacetic acid*) (THÖRNER and ZINCKE), 1879, A., 322; (BÖTTINGER), 1881, A., 1035.
- 2:5-Diphenylpyrazine** (*isoindole*) (STAEDEL), 1878, A., 420; (STAEDEL and KLEINSCHMIDT), 1879, A., 252.  
preparation and vapour density of (STAEDEL and KLEINSCHMIDT), 1880, A., 659.  
action of hydriodic acid on (STAEDEL and KLEINSCHMIDT), 1879, A., 252.
- Diphenylquinol**, *diido-* (KAEMMERER and BENZINGER), 1878, A., 574.
- Diphenylsemithiocarbazide** (FISCHER), 1878, A., 308.
- Diphenylsuccindone** (*dibenzylidicarbonyl*) (REIMER), 1882, A., 200.
- $\alpha$ -Diphenylsuccinic acid** (*dibenzylidicarbonyl acid*) (FRANCHIMONT), 1873, 390.
- $\beta$ -Diphenylsuccinic acid**, *diamido-* (REIMER), 1882, A., 170.
- Diphenylsuccinic acids**,  $\alpha$ - and  $\beta$ - (*dibenzylidicarbonyl acids*) (REIMER), 1882, A., 200.
- Diphenylsulphinic acid** (GABRIEL and DEUTSCH), 1880, A., 477.
- Diphenylsulphonamide** (GABRIEL and DEUTSCH), 1880, A., 476.
- Diphenylsulphone** (*sulphobenzide*) (GABRIEL and DEUTSCH), 1880, A., 476.  
action of chlorosulphonic acid on (OTTO and KNOLL), 1879, A., 243.  
derivatives, melting points of substituted (LENZ), 1879, A., 649.
- Diphenylsulphone**, *p*-*dichloro-* (BECKURTS and OTTO), 1879, A., 229.  
*tetranitro-* (BEILSTEIN and KURBATOFF), 1878, A., 139; 1879, A., 230.
- Diphenylsulphonedicarboxylic acid**, *diamido-* (MICHAEL and NORTON), 1877, ii., 619.
- Diphenylsulphone-*p*-dicarboxylic acid** (MICHAEL and ADAIR), 1878, A., 415.
- Diphenylsulphonedisulphonic acid** (OTTO), 1879, A., 649.
- Diphenylsulphone-*m*-sulphonic acid** (OTTO and KNOLL), 1879, A., 243; (OTTO), 1879, A., 649.
- Diphenyl-*p*-sulphonic acid**, *p*-*nitro-* (GABRIEL and DAMBERGIS), 1880, A., 890.
- Diphenylsulphonic chloride** (GABRIEL and DEUTSCH), 1880, A., 476.
- Diphenylthioacetic acid.** See Diphenylthioglycolic acid.

- Diphenylthiobenzamide** (*benzodiphenylthiamide*) (BERNTSEN), 1878, A., 71, 790.
- Diphenylthiocarbamide** (*thiocarbamilide*) (RATHKE), 1879, A., 51; (RAMBERGER), 1882, A., 395.  
 action of carbonyl chloride and of ethylenic bromide on (WILL), 1881, A., 905.  
 action of hydroxylamine on (SCHIFF), 1877, i., 314.  
 action of methylic and ethylic iodides on (WILL), 1881, A., 906; 1882, A., 723.  
 action of potassium chloracetate on (LANGE), 1879, A., 651.  
 desulphuration of, by mercuric oxide (WEITH), 1874, 272.  
 oxidation of (GUARESCHI), 1878, A., 860.
- Diphenylthiocarbamide** (*thiocarbamilide*), *p*-bromo- (DENNSTEDT), 1880, A., 634.  
*m*-nitro- (LOSANITSCH), 1882, A., 183.  
 formation of, by heating phenylthiocarbimide with nitraniline (BRÜCKNER), 1875, 166.  
*m*-mono- and *di*-nitro- (BRÜCKNER), 1874, 77; 1875, 166.
- Diphenylthiocarbazide** (FISCHER), 1878, A., 308; (FISCHER and BESTHORN), 1882, A., 1091.  
 colouring matter from (FISCHER), 1878, A., 308.
- Diphenylthiocarbazone**, oxidation and reduction of (FISCHER and BESTHORN), 1882, A., 1091.
- Diphenylthiocarbimide** (ZIMMERMANN), 1881, A., 176.
- Diphenylthiocarbodiazone** (FISCHER and BESTHORN), 1882, A., 1092.
- Diphenylthioglycollic acid** (GABRIEL and DEUTSCH), 1880, A., 477.
- Diphenyl-*p*-thioglycollic acid, *p*-amido-** (GABRIEL and DAMBERGIS), 1880, A., 890.
- Diphenylthiohydantoin** (LANGE), 1879, A., 651; (LIEBERMANN), 1882, A., 296.  
 formula of (LIEBERMANN and LANGE), 1880, A., 45.
- Diphenyltolylcarbinol** (E. and O. FISCHER), 1879, A., 386.  
*tri*amido-. See Rosaniline.
- Diphenyl-*m*-tolylene-dithiocarbamide** (LUSSY), 1875, 1036.
- Diphenyl-*o*- and -*p*-tolylmethane** (E. and O. FISCHER), 1879, A., 385.
- Diphenyl-*p*-tolylmethane**, synthesis of (V. HENILIAN), 1875, 152.
- Diphenyluramidodi-*m*-carboxylic acid** (*carbonyluramidobenzoic acid*) and its salts (WACHENDORFF), 1878, A., 674; (SARAUW), 1882, A., 609.
- Diphenylurethane** (MERZ and WEITH), 1874, 375; (ZIMMERMANN), 1881, A., 176.
- Diphenylvaleric acid** (SPIEGEL), 1882, A., 1077.
- Diphenyl-*p*-xylylmethane** (V. HENILIAN), 1881, A., 434.
- Diphosphophenyl**. See Phosphobenzene.
- Diphthalaldehyde** (ADOR), 1873, 392.
- Diphthalic acid** (ADOR), 1873, 68, 393; (HESSERT), 1878, A., 67.
- Diphthalimido-diphenyl and -*di*bromo-diphenyl** (GABRIEL), 1879, A., 324.
- Diphthalyl** (ADOR), 1873, 66; (GRAEBE and SCHMALZGAUG), 1882, A., 1298.  
 bromo- and *dichloro*- (ADOR), 1873, 68.  
 chloride (ADOR), 1873, 393.
- Diphthalylaldehydic acid** (ADOR), 1873, 67.
- Diphthalylethane** (*ethinediphthalyl*), and the action of bromine on (GABRIEL and MICHAEL), 1878, A., 230.
- Dipicoline** (*dimethyldipyrrolidone*), and its salts (RAMSAY), 1879, A., 265.  
 heat of formation of (RAMSAY), 1879, T., 696.
- Dipicolinic acid** (*pyridine-2:6-dicarboxylic acid*), and its salts (RAMSAY), 1879, A., 265.
- Di-*m*-picrylamine** (AUSTEN), 1875, 165; 1877, ii., 758.
- Di-*p*-picrylamine** (AUSTEN), 1875, 165; 1877, ii., 758; (WITT), 1878, T., 209.  
 action of, on naphthalene (MERTENS), 1878, A., 725.  
 barium compound of (AUSTEN), 1875, 166.
- Dipiperallylalkamine**. See Hydroxyallyldipiperidine.
- Dipiperyltetrazone** (KNORR), 1882, A., 1115.
- Diisoprene**, caoutchene and terpene, identity of the hydrates of (BOUCHARDAT), 1879, A., 1039.
- Dipropargyl** (HENRY), 1873, 1215; 1874, 351, 456; 1881, A., 565; (THOMSEN), 1881, A., 495.  
 heat of combustion of (THOMSEN), 1882, A., 721.  
 and benzene, comparison of (BERTHELOT and OGIER), 1881, A., 719.  
 compounds (HENRY), 1874, 351.  
 polymeride of, and *tet*riodide (HENRY), 1881, A., 565.



- Dipropargyl octobromides** (HENRY), 1874, 456, 1078.
- Dipropionic acid,  $\alpha$ -imido-** (*diethylidene-lactamic acid*) (HEINTZ), 1873, 269; 1880, A., 801; (ERLENMEYER and PASSAVANT), 1880, A., 313.  
nitroso- $\alpha$ -imido- (HEINTZ), 1873, 269; 1880, A., 801.
- Dipropionitrile,  $\alpha$ -imido-** (ERLENMEYER and PASSAVANT), 1880, A., 313.
- Dipropionyl dicyanide** (CLAISEN and MORITZ), 1880, T., 692; 1881, A., 154.
- Dipropionylquinol** (HESSE), 1880, A., 317.
- 1:3-Dipropoxybenzene** (*dipropylresorcinol*) and its derivatives, and bromo- and tetrachloro- (KARLÖF), 1881, A., 269.
- Dipropyl ketone** (*butyroun*), decomposition of, by zinc-dust (JAHN), 1881, A., 142.  
oxidation of (HERCZ), 1877, ii., 426.
- Diisopropyl ketone** (MÜNCH), 1875, 247; 1876, ii., 67.  
*mono-, di-, and tri-chloro-* (BARBAGLIA and GUCCI), 1881, A., 34.
- Dipropylacetal** (GIRARD), 1881, A., 34.
- Dipropylacetic acid** (*octoic acid*) (BURTON), 1882, A., 600.
- Dipropylacetolactone.** See Hydroxy-octoic acid, lactone of.
- Dipropylacetone.** See Methyl heptyl ketone.
- p*-Dipropylbenzene** and its derivatives, and dinitro- (KÖRNER), 1879, A., 142.
- n*-iso-Dipropylbenzene** (PATERNO and SPICA), 1877, i., 77; 1878, A., 138, 296.
- p*-Dipropylbenzenesulphonic acid** (KÖRNER), 1879, A., 142.
- Dipropylcarbinol** (*sec.-heptylic alcohol*) (STSCHEERBAKOFF), 1881, A., 401.
- Dipropylene** (*hexylene*) (PRUNIER), 1873, 486.
- $\beta$ -Dipropylethylenelactic acid.** See  $\beta$ -Hydroxy-nonoic acid.
- Dipropylglycollic acid** (*hydroxyoctoic acid*) (WORONTSOFF), 1878, A., 29.
- Dipropyllic dichlorosilicate** (CAHOUS), 1873, 871.  
sulphide (CAHOUS), 1873, 365.
- Dipropylketine.** See Dimethyldipropylpyrazine.
- Dipropylloxalic acid.** See Dipropylglycollic acid (*hydroxyoctoic acid*).
- Dipropylloxamide** from commercial trimethylamine (D'VILLIER and BUSINE), 1879, A., 912.
- Diisopropylphosphine** (V. HOFMANN), 1873, 882.
- Diisopropylsulphone** (BECKMANN), 1879, A., 38.
- Dipyridine** ( $\gamma\gamma$ -*dipyridyl dihydride*) (RAMSAY), 1879, A., 264.
- isoDipyridine** and its salts (RAMSAY), 1879, A., 264; (CAHOUS and ETARD), 1880, A., 672; 1881, A., 826.
- 2:3-Dipyridyl-2-mono- and -3:4-dicarboxylic acids** (SKRAUP), 1882, A., 1112.
- Dipyrocatechol** (BARTH and SCHREDER), 1879, A., 65.
- Dipyrogallol.** See Hexahydroxydiphenyl.
- Dipyromeconic acid, nitroso-** (ONT), 1879, A., 708.
- "Dipyrotartracetone"** (BOURGOIN), 1878, A., 488.
- Dipyrucic triureide** (GRIMAU), 1875, 449.
- apo*Diquinicine.** See Diconchinine under Alkaloids.
- "Diquinoline,"** and its platinochloride (WILLIAMS), 1881, A., 613.  
and its oxidation-product (CLAUS), 1882, A., 215.
- Diquinoline.** See Diquinolyl.
- Diquinols** (STENHOUSE and GROVES), 1878, T., 422.
- $\alpha$ -Diquinolyl, and its salts** (WEIDEL), 1882, A., 69.
- $\beta$ -Diquinolyl and its platinum salt** (JAPP and GRAHAM), 1881, T., 174.
- Diquinolyline.** See Diquinolyl.
- Diresorcinol, tetrabromo-** (BENEDIKT), 1879, A., 55, 465.  
 *$\alpha$ -tetranitro-* (BENEDIKT and V. HÜBL), 1881, A., 1132.
- Diresorcinol ketone** (NENCKI and SIEBER), 1881, A., 812.
- Diresorcinol-phthalein and -phthalin** (LINK), 1881, A., 95.
- Disalicylamide** (SCHULERUD), 1881, A., 42.
- Diseases, plant-, researches on** (KÜHN), 1882, A., 888.
- Disinfectants** (ANON.), 1876, ii., 564.  
saline (RICH), 1873, 308.  
carbolic acid and cresol as (ENDEMANN), 1876, i., 990.  
nitric oxide as a (SUILLOT), 1881, A., 664.
- Disinfecting powers of the chlorophenols** (ČECH), 1881, A., 126.  
of oxidised oil of turpentine (KINGZETT), 1877, i., 184.
- Disinfection** (LAUJORROIS), 1873, 763.  
by the aid of hot air (KOCH and WOLFFHÜGEL), 1882, A., 1143.
- Dispersion.** See under Photochemistry.

**Dissociation** (HORSTMANN), 1876, ii., 269; 1877, i., 433.  
 crystalline (FAYRE and VALSON), 1873, 31, 129; 1874, 120, 650; 1875, 330.  
 comparison of formulae deduced from experiment (LEMOINE), 1881, A., 1095.  
 use of diffusion in the study of the phenomena of (TROOST), 1879, A., 1006.  
 applied to the interpretation of some volcanic phenomena (SILVESTRI), 1876, i., 200.  
 some phenomena of, and a new product of the oxidation of lead (DEBRAY), 1878, A., 473.  
 of certain compounds at very low temperatures (LEEDS), 1874, 947.  
 of ammoniacal salts and acetates (DEBBITS), 1873, 33.  
 at the cleavage surfaces of crystalline hydrates (SCHRÖDER), 1875, 606.  
 of hydrated salts (WIEDEMANN), 1874, 946, 1131.  
**Dissocioscope** (TOMMASI), 1881, A., 343.  
**Dissolution.** See Solution.  
**Disthene.** See Kyanite.  
**Distillation, fractional** (WANKLYN), 1873, 345; (GLASHAN), 1873, 590.  
 theory of (THORPE), 1879, T., 544; (BROWN), 1879, T., 547.  
 comparative value of different methods of (BROWN), 1880, T., 49.  
 apparatus for (HENNINGER and LEBEL), 1874, 1133; 1875, 128; (GLINSKY), 1875, 606; (THÖRNER), 1877, i., 682; (HEMPER), 1882, A., 551.  
 with dephlegmator and with long tube (BROWN), 1880, T., 50.  
 with a still-head of uniform temperature (BROWN), 1881, T., 517.  
 of a heterogeneous liquid (TROOST), 1879, A., 875.  
 of substances which are not miscible one with the other and which mix in all proportions and between which no combination of any kind is known to take place (BROWN), 1879, T., 549.  
**Distilled water.** See under Water.  
**Distilleries,** disadvantages of cooling-pans in (WITTELSHÖFER), 1881, A., 1089.  
**Distillery material,** seeds of the corn-cockle as (ULERICH), 1880, A., 501.  
**Distyrene** (FITTIG), 1880, A., 121.

**Distyryl ketone** (*cinnamone*; *di-benzylidenacetone*) (CLAISEN and CLAPARÈDE), 1881, A., 423; 1882, A., 511; (CLAISEN), 1882, A., 513.  
**Disuccinophenylenediamide** (BIEDERMANN), 1877, i., 474.  
**Disulphaminebenzoic acid** (FAHLBERG), 1881, A., 817.  
**Disulphanilic acid.** See Aniline-2:4-disulphonic acid.  
**Dita bark** (*Alstonia scholaris*; *Echites scholaris*), alkaloids from (v. JOBST and HESSE), 1876, i., 276; (HALNACK), 1879, A., 332; (HESSE), 1881, A., 448.  
**Ditaine and ditamine.** See under Alkaloids.  
**Ditartaric acid,** search for, in tartaric liquors (WARINGTON), 1875, 986.  
 reactions of (WARINGTON), 1875, 943.  
**Dithionic acid.** See under Sulphur.  
**Dithymol.** See Dihydroxydicymyl.  
**Dithymoxylethane.** See Dihydroxydicymylethane.  
**Dithymylethene.** See Dihydroxydicymylethylene.  
**Di-*p*-toluo-*o*-phenylenediamide** (HÜBNER), 1882, A., 504.  
***op*-Ditolyl,** preparation of (CARNELLEY), 1880, T., 701.  
***pp*-Ditolyl,** perchlorination of (MERZ, ZETTER, RUOFF and MOË), 1879, A., 721.  
 oxidation of (DOEBNER), 1876, i., 914.  
**Ditolyls,** action of heat on (BARBIER), 1874, 1091.  
 oxidation of (CARNELLEY), 1877, ii., 653.  
**Ditolyls, diamido- (*tolidins*)** isomeric, and their derivatives (GOLDSCHMIDT), 1879, A., 235; (MICHLER and SAMPAIO), 1882, A., 177; (MICHLER and PATTINSON), 1882, A., 199.  
**Di-*p*-tolyl ketone** (WEILER), 1875, 151; (ADOR and CRAFTS), 1878, A., 405; (HAISS), 1882, A., 1071.  
 action of carbonyl chloride on (ADOR and RILLIET), 1878, A., 498.  
**Di-*o*-tolylacetamidine** (*ethenyldi-*o*-tolyl-diamine*) (LADENBURG), 1878, A., 54.  
**Di-*p*-tolylacetamidine** (WALLACH), 1877, i., 91.  
**Ditolylacetylene** (GOLDSCHMIDT and HEPP), 1874, 370.  
**Di-*m*- and -*p*-tolylamine** (COSACK), 1880, A., 714.  
**Di-*p*-tolylamine,** derivatives of, and *o*-mono- and *di*-nitro- (LELLMANN), 1882, A., 1060.  
*tetradromo-* and *hexanitro-* (LEHNE), 1881, A., 41.  
 nitroso- (COSACK), 1880, A., 714.

- Di-*p*-tolylisoamylamine** (GIRARD), 1876, i., 264.
- Di-*p*-tolylarsenious chloride and di-*p*-tolylarsinic acid** (LA COSTE), 1881, A., 904.
- Di-*o*-tolylcarbamide** (GIRARD), 1873, 912; (LACHMANN), 1879, A., 935; (BERGER), 1880, A., 245.
- Di-*m*-tolylcarbamide** (COSACK), 1880, A., 245, 713.
- Di-*p*-tolylcarbamide** (LANDGREBE), 1878, A., 217; (SARAUV), 1882, A., 507.  
diamido-, and its hydrochloride, and dinitro- and its reduction (PERKIN), 1880, T., 699.
- Di-*p*-tolyltrichlorethane and dibromo- and dinitro-** (FISCHER), 1875, 154.
- Di-*p*-tolylidamide** (HÜBNER), 1878, A., 144.
- Di-*p*-tolyl diazobenzenecarbamide.**  
See Benzeneazoditolylcarbamideazobenzene.
- as*-Di-*p*-tolylethane** (FISCHER), 1875, 155; (HAISS), 1882, A., 1071.  
*trichloro-*. See Ditolyltrichlorethane.
- Di-*p*-tolylethylamine** (GIRARD), 1876, i., 264.
- Ditolyethylene** (GOLDSCHMIEDT and HEPP), 1874, 370; (FRIEDEL and BALSOHN), 1881, A., 260.
- as*-Ditolyethylene** (HEPP), 1875, 361.
- Di-*p*-tolylethylenediamine**, action of carbonic chloride on (MICHLER and KELLER), 1882, A., 183.
- Di-*o*-tolylformamidine** (*methenyldi-*o*-tolylidamine*) (LADENBURG), 1878, A., 54.
- Di-*o*-tolylguanidine**, and its dicyanide and hydrochloride (BERGER), 1880, A., 244, 803.
- Di-*p*-tolylguanidine** (STEINER), 1875, 882; (v. HOFMANN), 1878, A., 301.  
preparation of, and action of nitric acid on (PERKIN), 1880, T., 696.  
*dicyano-* (LANDGREBE), 1878, A., 216; 1879, A., 53.  
*dinitro-*, and its nitrate (PERKIN), 1880, T., 697.
- s*-Di-*o*-tolylhydrazine** ( *$\alpha$ -hydrazotoluene*) (PETRIEFF), 1873, 1028.  
*diamido-* (BUCKNEY), 1878, A., 863.
- s*-Di-*m*-tolylhydrazine** (GOLDSCHMIEDT), 1879, A., 236.
- Di-*p*-tolylhydrazine** (LEHNE), 1881, A., 41.
- Ditolylhydrazinedisulphonic acid** (NEALE), 1880, A., 806.
- Ditolylic oxides** (GLADSTONE and TRIBE), 1882, T., 10.
- Di-*p*-tolyllic disulphide** (SCHILLER and OTTO), 1877, i., 306; (BECKURTS and OTTO), 1879, A., 229; (OTTO), 1880, A., 810.  
action of alcoholic potash on (SCHILLER and OTTO), 1877, i., 463.
- Ditolylidimidotoluene**, amido- [m.p. 244°] (BASILOWSKY), 1878, A., 300; 1879, A., 237; 1881, A., 432.
- Ditolylmethane**, and *dibromo-*, and *dichloro-* (WEILER), 1875, 151.
- Di-*p*-tolylmethylamine** (GIRARD), 1876, i., 264.
- Ditolylmucamide** (KÖFTNITZ), 1873, 163.
- Di-*p*-tolyl nitrosamine** (LEHNE), 1881, A., 41.
- Ditolylloxamide** (HÜBNER), 1882, A., 181.
- Di-*p*-tolylparabanic acid** (LANDGREBE), 1878, A., 216; 1879, A., 53, 62.
- Di-*p*-tolylphthalide** (v. PECHMANN), 1882, A., 185.
- Di- $\alpha$ -tolylpropionic acid**, and its derivatives (BÖTTINGER), 1881, A., 1035; (HAISS), 1882, A., 1071.
- Di-*o*- and -*p*-tolylsuccindiamides** (DE BECHT), 1879, A., 528.
- Ditolylsuccinimide.** See Succinodi-*p*-tolylidamide.
- Di-*p*-tolylsulphone** (*sulphotoluide*), constitution of (OTTO), 1879, A., 926.
- Ditolylthiocarbamide**, preparation of (WEITH), 1873, 908.
- Di-*o*-tolylthiocarbamide** (BERGER), 1880, A., 244.
- Di-*p*-tolylthiocarbamide**, action of carbonyl chloride on (WILL), 1881, A., 906.
- Ditolylthiocarbamides**, action of alcoholic iodides on (WILL and BIELSCHOWSKI), 1882, A., 1090.
- Divaleryl**, preparation of (BRÜHL), 1879, A., 520.
- Divicine** (RITTHAUSEN), 1881, A., 1159.
- Dixylene** and its products of oxidation (OLIVERI), 1882, A., 853.
- Di-*p*-xylyl** (JACOBSEN), 1882, A., 188.
- m*(?)-Dixylyl ketone** (ADOR and RILLET), 1878, A., 498.
- Djugara**, a new kind of corn (ANON.), 1881, A., 1065.
- Dodecylene** (*triisobutylene*; *dimethyl-di-tert.-butylethylene*) (LERMONTOFF), 1878, A., 963; (DOBBIN), 1880, T., 241; (BUTLEROFF), 1880, A., 230.
- Dog biscuit**, examination of (MAYER), 1880, A., 836.
- Dogs**, new constituent of the urine of (JAFFÉ), 1875, 478.  
occurrence of allantoin and hippuric acid in the urine of (SALKOWSKI), 1878, A., 594.

- Dogs**, separation of ammonium chloride in the urine of (FEDER), 1878, A., 237, 993.  
 behaviour of uric acid absorbed by the intestinal canal of (SALKOWSKI), 1878, A., 525.  
 conversion of uric acid into urea in the body of (V. VOIT), 1878, A., 444.
- Dolerite** (V. SANDBERGER), 1874, 557.  
 from Wintergreen Lake (HAWES), 1876, i., 351.  
 enclosing native iron from Greenland (SMITH), 1879, A., 892.
- Dolerites**, British carboniferous, microscopic structure, and composition of (ALLPORT), 1875, 873.
- Dolomite**, yellow, from Bleiberg (V. ZEPHAROVICH), 1879, A., 19.  
 from the mountain of Rodella (DOELTER), 1876, i., 888.  
 from Silurian formations (STOLBA), 1874, 967.  
 of South Tyrol (LORETZ), 1881, A., 27.  
 pseudomorph of, after garnet (LAUBE), 1873, 857.  
 pseudomorph of calcite after (V. LASAULX), 1876, ii., 488.  
 preparation of magnesium carbonate from (ANON.), 1874, 96; (BECKURTS), 1882, A., 13.  
 action of acetic acid on (V. HAUSNOFFER), 1882, A., 659.  
 calcined, employment of, for taking casts (GLASENAPP), 1878, A., 535.
- Dolomitic limestone**, preparation of Portland cement from (ERDMENGER), 1874, 96; 1875, 672.
- Double decomposition**. See under Affinity.
- Double refraction**. See Photochemistry.
- Double salts**. See under the respective metals or basic radicles and Salts.
- Douglasite** (PRECHT), 1881, A., 227.
- Dracylie acid**, nitro-. See Benzoic acid, *p*-nitro-.
- Dragon's blood**, decomposition of, by distillation over zinc-dust (BÖTSCH), 1882, A., 209.
- Drainage water**. See Agricultural Chemistry.
- Drinking water**. See Water.
- Drops** on solid bodies, especially on cylinders (LASSWITZ), 1874, 767.
- Drosera**, nutrition of (REGEL), 1880, A., 820.
- Drosera intermedia*, acid of (STEIN), 1880, A., 36.
- Drugs**, testing (SIEBOLD), 1880, A., 71.
- Drupose** (CROSS and BEVAN), 1882, T., 106.
- Drying apparatus**, improved form of (SEELIG), 1882, A., 244.  
 See also Exsiccator.
- Drying chamber** with mica walls (OUDEMANS), 1873, 412.
- "Dualin"** (SCHWARZ), 1873, 304; (NIEDERSTADT), 1880, A., 596.
- Duboisine**. See under Alkaloids.
- Duck-weed** (*Lemna trisulca*), composition of (MAYER), 1882, A., 422.
- Dudleyite** (GENTH), 1874, 550.
- Dufrenite** (*delaunite*; *kravite*) (VÁLA and HELMHACKER), 1875, 739; (STRENG), 1881, A., 527.  
 from Rockbridge Co., Virginia, composition of (MASSIE), 1881, A., 529; (CAMPBELL), 1881, A., 1111.
- Dulcamarin** and **dulcamaretin**, constituents of (*Solanum Dulcamara*) (GEISSLER), 1876, i., 714.
- Dulcitan** and **dulcitanpentasulphonic acid** (CLAËSSON), 1879, A., 1034.
- Dulcite**. See Dulcitol under Carbohydrates.
- isoDulcite*. See *isoDulcitol* under Carbohydrates.
- Dumortierite** from Beaunan, near Lyons, and its composition (GONNARD; DAMOUR), 1882, A., 151.
- Dunite** of the Jenks Mine, Macon Co., N. Carolina (RAYMOND), 1881, A., 540.
- Durangite** (BRUSH), 1877, i., 286.  
 occurrence of, in the tin ore district of Durango, Mexico (HANKS), 1877, ii., 719.  
 crystalline form and optical properties of (DES CLOIZEAUX), 1875, 869.
- Duporthite**, a new asbestiform mineral (COLLINS), 1879, A., 24.
- Durene** (1:2:4:5-tetramethylbenzene) (JANNASCH), 1874, 987; 1877, ii., 751; (ADOR and RILLIET), 1879, A., 527; (FRIEDEL and CRAFTS), 1881, A., 40.  
 from camphor (DE MONTGOLFIER), 1878, A., 899.  
 constitution of (REUTER), 1878, A., 413.
- d*-nitro- (ROMMIER), 1873, 888.
- isoDurene* (1:2:3:5-tetramethylbenzene) and its derivatives (ADOR and RILLIET), 1879, A., 527; (BIELEFELDT), 1880, A., 37.  
 bromo- (BIELEFELDT), 1880, A., 38.
- isoDuren*esulphonic acid and its salts (BIELEFELDT), 1880, A., 37.
- "Durenyl"** (FRIEDEL, CRAFTS and ADOR), 1879, A., 714.



- Durenlydibenzoyl.** See Diphenyl tetramethylphenylene diketone.
- Duroylbenzoic acid**, and its salts (FRIEDEL and CRAFTS), 1881, A., 732.
- "Duryl"** (FRIEDEL, CRAFTS and ADOR), 1879, A., 713.
- Durylic acids.** See Cuminic acids.
- Dust in the air** (TISSANDIER), 1874, 672; 1881, A., 843.  
presence of nickel in atmospheric (TISSANDIER), 1876, ii., 614.  
in workshops, estimation of (HESSE), 1881, A., 761.  
fog, and clouds, relations between (AITKEN), 1881, A., 970.
- Dust showers** of Sicily and Italy, presence of iron in (TISSANDIER), 1876, i., 353; (TACCINI), 1879, A., 515; 1880, A., 709.
- Dyed cloths**, causes and preventions of stains, spots and other defects in (ANON.), 1877, i., 362.
- Dyed stuffs**, detection of eosin in (WAGNER), 1876, ii., 328.  
sodium hyposulphite ( $\text{Na}_2\text{SO}_3$ ) as a reagent in the analysis of the colouring matters of (SCURATI-MANZONI), 1877, i., 349.
- Dyeing**, researches in (MILLS and THOMSON), 1879, T., 26; (MILLS and CAMPBELL), 1879, T., 290.  
use of electrolysis in (GOPPELSROEDER), 1882, A., 1338.  
use of Epsom salts and sulphurous acid in (ANON.), 1874, 500.  
steam, application of nitralizarin to (STAMM), 1877, ii., 950.  
of feathers (REIMANN), 1873, 1069.  
wool, use of chrome alum instead of potassium dichromate in (JOCLET), 1879, A., 185.  
use of the zinc bath in (ANON.), 1874, 1192.  
woollen-goods, the water used in (JARMAN), 1878, A., 625.  
cochineal-red for (KIELMEYER), 1877, ii., 380.  
with aniline-black (WITZ), 1879, A., 684.  
by means of vanadium salts (HOMMEY), 1878, A., 356.  
and printing with cerulein and gallein (DURANT), 1878, A., 924.  
with madder colours and their artificial substitutes, part played by acids in (ROSENSTIEHL), 1876, i., 818; ii., 677.  
with methylene-blue (ANON.), 1882, A., 127.  
with murexide (KOPP), 1873, 75.  
blue (GRAEFE), 1873, 422.
- Dyeing**, purple, in modern times (SCHUNCK), 1880, T., 613.  
Turkey-red (ROMEGLIALLI), 1875, 491.  
use of artificial alizarin in (RÖMER), 1876, i., 459.  
mordant for (MÜLLER-JACOBS), 1879, A., 187.  
substitute for oil-mordant in (MÜLLER-JACOBS), 1874, 722.  
estimation of olive-oil in (KOPP), 1876, i., 761.
- Dyes.** See Colouring matters.
- Dye-works**, treatment of waste liquors from (HIGGIN and STENHOUSE), 1875, 676.
- Dynamics**, chemical. See Affinity.
- Dynamite** (SCHWARTZ), 1873, 304.  
manufacture of (SOBRERO), 1876, ii., 680.  
effects of (ROUX and SARRAU), 1873, 1068.  
analysis of (LUNGE), 1882, A., 1327.  
estimation of nitrogen in the nitroglycerin of (SAUER and ADOR), 1878, A., 165, 611.  
estimation of nitroglycerin in (CHAMPION and PELLET), 1873, 1165; (HEMPLE), 1881, A., 472.
- "Dystropodextrin"** (SEEGEN), 1879, A., 549.
- Dysanalyte**, a mineral resembling pyrochlore (KNOP), 1878, A., 385.
- Dysodile** in the Ries district (FRICKHINGER), 1876, i., 194.

## E.

- Earth**, detection of coal gas in (KÖNIGS), 1880, A., 684.  
edible, from Japan, composition of (LOVE), 1880, A., 702.  
of Lapland and Southern Persia (SCHMIDT), 1873, 151.  
composition of, from the Neograd district in Hungary (BRIX), 1876, ii., 56.  
infusorial (SCHARIZER), 1881, A., 545.  
action of, on colouring-matters (ENGEL), 1880, A., 427.  
behaviour of, to aniline dyes (BÖTTGER), 1875, 170.
- Spanish**, description and composition of (WARINGTON), 1875, 955.  
influence of, on the analysis of lees (WARINGTON), 1875, 969.  
clearing action of (WEIGELT and SAARE), 1880, A., 517.
- Earths**, alkaline. See Alkaline earths.  
rare, some presumably new (GERLAND), 1878, A., 934.

**Earths**, rare, new, of the cerium-group (SMITH), 1879, A., 12.  
 in gadolinite and samarskite (MARIGNAC), 1879, A., 113; 1881, A., 73; (DELAFontaine), 1879, A., 116; 1880, A., 611; (ROSCOE), 1882, T., 277.  
 valency of metals of the (NILSON), 1875, 1001; 1876, ii., 381; 1877, i., 49.  
 and their salts, physical properties of (NILSON and PETERSSON), 1880, A., 838.  
 salts of the, spectra of (SORET), 1878, A., 629; 1879, A., 862.  
 magnetic properties of (NILSON and PETERSSON), 1880, A., 839; 1881, A., 495.  
 and their salts, molecular heats and molecular volumes of (NILSON and PETERSSON), 1880, A., 838; 1881, A., 494.  
 compounds of mercuric cyanide with the chlorides of the (AHLEN), 1877, ii., 423.  
 See also Cerium metals.  
**Earthenware goods** (ANON.), 1880, A., 155; 1881, A., 324, 477.  
 English glaze for (SEGER), 1873, 1170.  
**Earth-nut** (*Arachis hypogaea*; *ground-nut*; *pat-nut*). See under Agricultural Chemistry.  
**Ebonite**, expansion of, by heat (KOHLE-RAUSCH), 1874, 430.  
**Ebullioscope** (MALLIGAND and BROS-SARD-VIDAL), 1874, 1014; (WAAGE), 1879, A., 1065.  
**Ebullition**, intermittent (PHIPSON), 1875, 864.  
**"Ebullition-volumes"** (RAMSAY), 1879, T., 468.  
**Echicaoutchin, echiceric acid, echicerin, and echiretin** (v. JOBST and HESSE), 1876, i., 276.  
**Echicerin and echitin**, qualitative reactions of (HESSE), 1878, A., 800.  
**Echinodermata**, mineral constituents of (HILGER), 1875, 903.  
**Echitamine**. See Ditaine under Alka-loids.  
**Echitenine** (HESSE), 1881, A., 448.  
*Echites scholaris*. See Dita bark.  
**Echitin** (v. JOBST and HESSE), 1876, i., 277.  
**Eclogite**, composition of (RIESS), 1880, A., 16.  
 from Eibiswald in Styria (MAUTH-NER), 1873, 1116.  
 of Jagersfontein, Orange Republic, South Africa (COHEN), 1881, A., 552.

**Eclogite** of the Saxon granulite district (DATHE), 1876, ii., 387, 612.  
**Edible earth**. See Earth.  
**Egg-albumin**. See Albumin.  
**Egg-peptone**, preparation of (CATILLOX), 1881, A., 450.  
**Eggs**, certain modifications of, deter-mined by fungoid growths (BÉ-CHAMP and EUSTACHE), 1878, A., 83.  
 spontaneous alteration in (GAYON), 1873, 522, 1150; (BÉCHAMP), 1875, 1210.  
 decomposition of (THOMSON), 1875, 175.  
 processes of decomposition occurring during the rotting of (ČERN), 1881, A., 110.  
 influence of certain substances on the preservation of (CALVERT), 1874, 175.  
 chemical changes occurring in, during incubation (v. VOIR), 1878, A., 525; (PORT), 1879, A., 474.  
 amount of cholesterol in (BENECKE), 1882, A., 78.  
 crystals in (GAYON), 1876, i., 91.  
 "starch granules" and "anyloids" of (DASTRE), 1879, A., 662.  
 white of, albuminous compounds of (HEYNSIUS), 1875, 469; 1876, ii., 208.  
 non-identity of the albuminoids of crystallin with (BÉCHAMP), 1880, A., 815.  
 yolk of (CARLES), 1882, A., 1339.  
 bacteria in (BÉCHAMP and EUS-TACHE), 1878, A., 83.  
 ferment produced by the morbid growth of the bioplasm of (THOM-SON), 1879, A., 478.  
 pigments of (MALY), 1882, A., 76.  
 of reptiles, chemical constituents of (HILGER), 1873, 924.  
**Egg-shells**, birds', colouring matter of (LIEBERMANN), 1878, A., 590.  
**Egyptian blue** (DE FONTENAY), 1874, 833.  
**Egyptian bronze figures**, ancient, com-position of (FLIGHT), 1882, T., 142.  
**Ehlite**. See Phosphorochalcite.  
**Eikosylene**. See Icosinene.  
**Ekabor** (*ekaboron*) (CLEVE), 1880, A., 8; (NILSON), 1880, A., 851.  
**Ekdemite** (v. NORDENSKIÖLD), 1879, A., 22.  
*Elæococca Vernicia* (oil-tree of China; *Tong-Yeou*), constituents of the seed of (CLOËZ), 1876, i., 616; ii., 102.  
**Elæomargaric acid**, modifications of, produced by light and heat (CLOËZ), 1877, i., 454.

**Elasticity**, determination of, of regular crystals in different directions (GROTH), 1876, ii., 42.

and density of gas, relations between the variations of, at pressures less than one atmosphere (SILJESTRÖM), 1875, 38; (MENDELÉEFF), 1875, 231.

of metals at different temperatures (PISATI), 1877, i., 38; ii., 162, 700.

of torsion (PISATI), 1877, i., 39.

**Elastin**, putrefaction of (WÄLCHLI), 1878, A., 591.

**Elaterin**, test for (LINDO), 1878, A., 344.

**Elaterite** (HELM), 1879, A., 301.

**Elder-tree** (*Sambucus nigra*), composition of the ash of the bark of the (WITTSTEIN), 1876, i., 736.

#### ELECTROCHEMISTRY—

**Accumulators** (ROUSSE), 1882, A., 135; (OSTER; SUTTON), 1882, A., 258.

efficiency of (REYNIER), 1881, A., 868.

as electromagnetic motors (V. JACOBI), 1874, 766.

Faure's (REYNIER), 1881, A., 671; (ALLARD, LE BLANC, JOUBERT, POTIER and TRESKA), 1882, A., 680.

Grove's (MORLEY), 1878, A., 463.

electromotive force of palladium in (VILLARI), 1875, 123.

Planté's (BÖTTGER), 1879, A., 101.

Faure's, Grove's and Planté's (ADAMS), 1882, A., 352.

**Battery**. See Cells.

**Cells**, improvements in (LINDO), 1881, A., 1092.

inconstant, theory of (EXNER), 1881, A., 866.

polarised, resistance of (COHN), 1881, A., 958.

measure of the electromotive force of, in absolute units (CROVA), 1874, 756.

with a single liquid depolarised by the action of atmospheric air (PULVERMACHER), 1878, A., 829.

with manganese, forming salts which can be utilised or regenerated (ROUSSE), 1882, A., 134.

in which the carbon electrode is the one attacked (JABLOCHOFF), 1878, A., 191.

air (GLADSTONE and TRIBE), 1873, 582.

aluminium (WÖHLER), 1880, A., 838.

Bunsen's, treatment of (BEILSTEIN and JAWEIN), 1879, A., 576.

#### ELECTROCHEMISTRY—

**Cells**, Bunsen's chromic acid (MÜLLER), 1873, 125; 1874, 429.

carbon, effect of surrounding the negative electrode of a, with charcoal powder (DU MONCEL), 1873, 25.

dichromate, salts used by Voisin and Dronier for the (DU MONCEL), 1873, 947.

Daniell's, influence of concentration of the solutions on the electromotive force of (V. HEPPERGER), 1881, A., 335.

Grove's, improved form of (YEATES), 1873, 590.

electromotive force of, in terms of Siemens-Weber units (RIECKE), 1879, A., 998.

Leclanché's (LECLANCHÉ), 1876, ii., 589; 1879, A., 1.

function of the peroxides in the (V. BEETZ), 1875, 222.

crystals formed in the (PÄRWOZNIK), 1876, ii., 173.

composition of the crystals deposited on the zincs in (LONGI), 1882, A., 697.

manganese dioxide, new (GAIFFE), 1878, A., 633.

Niaudet's (NIAUDET-BREGUET), 1880, A., 149.

platinum-water, quantity of electricity necessary for charging a (HERWIG), 1879, A., 194.

silver chloride, electric discharge of (DE LA RUE and MÜLLER), 1876, i., 334; 1880, A., 203; 1882, A., 258.

Smee's, and galvanic polarisation (HALLOCK), 1882, A., 1155.

thermoelectric (V. WALTENHOFEN), 1873, 465; (CLAMOND), 1874, 861.

voltaic (D'ARSONVAL), 1881, A., 3.

easily prepared (ONIMUS), 1876, ii., 267.

with constant current (HÉRAUD), 1879, A., 426.

chemical work done by the (TOMMASI), 1882, A., 1257.

new contact theory of (FLEMING), 1875, 123.

replacement of electropositive by electronegative metals in a (GLADSTONE and TRIBE), 1876, ii., 37; (SKEY), 1876, ii., 266.

application of the telephone to the estimation of resistance in (LESS), 1882, A., 789.

See also Couples, galvanic, and Pile.

## ELECTROCHEMISTRY—

**Circuit** produced by the reaction current of electrolysis and by evaporation and condensation (MOSER), 1881, A., 1092.

closed, external work in (COLLEY), 1882, A., 1156.

galvanic, resistance of a (HERWIG), 1875, 529.

application of the telephone to the estimation of resistance in (LESS), 1882, A., 789.

division of the positive metal in the, between two acids (FRICH), 1877, i., 677.

variable period at the close of (CAZIN), 1874, 766.

effect of heat on, completed by an electrolyte (HELLESEN), 1877, i., 429.

**Conductivity**, unilateral (SCHUSTER), 1875, 39.

unipolar (BRAUN), 1876, i., 668; 1879, A., 194.

and electrolysis of chemical compounds (BLEKKRODE), 1878, A., 464.

of woody bodies and other bad conductors (DU MONCEL), 1875, 121.

of moderately good conductors (DU MONCEL), 1876, i., 28, 331.

of imperfect conductors (DU MONCEL), 1876, i., 510.

of electrolytes (BERGGREN), 1878, A., 101.

of glass, variation of, with temperature, density, and chemical composition (GRAY), 1882, A., 680.

of heated gases (BLONDLOT), 1881, A., 671.

of bromine and iodine (EXNER), 1882, A., 679.

of carbon (V. BEETZ), 1881, A., 776. as affected by temperature (V. SIEMENS), 1880, A., 837.

and polarisation of minerals (DU MONCEL), 1876, i., 29.

of fused salts (BRAUN), 1875, 30, 996.

of solid salts (GROSS), 1878, A., 363.

of the halogen compounds of lead (WIEDEMANN), 1876, i., 668.

of selenium (V. SIEMENS), 1877, i., 677; 1878, A., 361.

in the Sprengel vacuum (MOSS), 1876, ii., 271.

and thermoelectric position of steel in their relation to its hardness (BARUS), 1879, A., 999.

of water (KOHLEAUSCH), 1877, i., 429.

## ELECTROCHEMISTRY—

**Conductivity** of liquids (KERR), 1880, A., 599; 1882, A., 678; (BOUTY), 1882, A., 912.

of liquids, determination of (TOLLINGER), 1878, A., 103.

influence of temperature on (EXNER and GOLDSCHMIEDT), 1878, A., 830.

of saline solutions (LONG), 1881, A., 71.

dependence of the, on the amount of salt contained in them, and on their temperature (KOHLEAUSCH and GROTRIAN), 1875, 605.

of acids, in aqueous solution (KOHLEAUSCH), 1877, ii., 104.

of nitric acid in aqueous solution (KOHLEAUSCH and GROTRIAN), 1875, 1149; 1876, i., 182.

of alkali and alkaline-earth chlorides in aqueous solution (KOHLEAUSCH and GROTRIAN), 1875, 605, 1149.

of solutions of certain metallic chlorides (KOHLEAUSCH and GROTRIAN), 1876, i., 182.

of zinc sulphate solution (V. BEETZ), 1879, A., 864.

See also Electrical Resistance.

**Conductors**, number of ether-molecules contained in, and on their weight (HERWIG), 1874, 766.

**Couples**, galvanic, theory of (EXNER), 1881, A., 335.

electromotive force of (VILLARI), 1875, 123; (THOMSEN), 1881, A., 216; (FROMME), 1881, A., 490.

change in the electromotive force of, by heat (VOLLER), 1874, 219.

zinc-carbon, electromotive force of (BERTHELOT; TOMMASI), 1882, A., 1156.

which consist only of elementary substances (EXNER), 1882, A., 679.

estimation in mechanical units of the quantity of electricity produced by a (BRANLY), 1874, 332.

apparatus for the convenient arrangement of different combinations of (BOUX), 1874, 766.

See also Cells.

**Current**, is it an ether-current? (ROITI), 1874, 766; (EDLUND), 1874, 865; 1875, 38.

produced by light (LAUR), 1882, A., 352.



## ELECTROCHEMISTRY—

**Current** caused by liquid diffusion and osmose (GORE), 1881, A., 963; 1882, A., 260.

produced by the flow of liquids through tubes (DORX), 1879, A., 346.

from a Gramme machine, effects produced in a vacuum by (JAMIN and MANEVRIER), 1882, A., 913.  
distribution of, in electrolytes (MÜLLER), 1874, 866; 1875, 123.  
work produced by the (COLLEY), 1877, i., 160.

action of, on fused amalgams and alloys (OBACH), 1876, ii., 37.

action of, on some gases and mixtures of gases (DE WILDE), 1874, 646.

behaviour of, in rarefied gases (NARR), 1879, A., 345.

effects of, on mercurial electrodes, immersed in various solutions (DU MONCEL), 1873, 833.

produced by non-simultaneous immersion of mercury electrodes in different liquids (QUINCKE), 1875, 414.

effects of, on the surfaces of mutual contact of aqueous solutions (GORE), 1881, A., 962; 1882, A., 260.

some effects of transmitting, through magnetised electrolytes (GORE), 1882, A., 566.

absolute measurements of, by electrolysis (MASCART), 1881, A., 958.

of high tension (PLANTÉ), 1876, i., 28.

action of, in conjunction with electrocapillary currents (BECQUEREL), 1875, 328.

galvanic, chemical action of (EDLUND), 1874, 15.

change in the direction of the polarisation current after the passage of an oppositely directed (HANKEL), 1877, ii., 819.

influence of, on diffusion of liquids (GORE), 1881, A., 963.

between solutions of the same substance of different degrees of concentration (MOSER), 1878, A., 463.

passage of, through iron (AUERBACH), 1879, A., 686.

polarisation, change in the direction of, after the passage of an oppositely directed galvanic current (HANKEL), 1877, ii., 819.

## ELECTROCHEMISTRY—

**Current**, secondary (KNOCHENHAUER), 1874, 123; 1875, 39.

**Diamagnetism** of condensed hydrogen (BLONDIET), 1877, ii., 820.

**Dielectric capacity**. See Specific inductive capacity.

**Dielectric constants** of insulators, experimental determination of (KESSLER), 1875, 38.

of liquids (SILOW), 1876, ii., 267.

**Dielectric media**, laws of electric and magnetic forces in, and their relation to the theory of light (STEFAN), 1875, 995.

**Electric arc**, studies on the (DEWAR), 1880, A., 23; 1881, A., 962; 1882, A., 259.

appearance of the, in vapour of carbon disulphide (JAMIN and MANEVRIER), 1882, A., 1157.

sound of the (NIAUDET-BREQUET), 1881, A., 959.

alternating currents, and the electromotive force of the (JOUBERT), 1880, A., 783.

electromotive force of the (LE ROUX), 1881, A., 958.

temperature of the (ROSSETTI), 1880, A., 206.

formation of hydrocyanic acid in the (DEWAR), 1880, A., 23.

**Electric discharge**, phosphorescence produced by (WIEDEMANN), 1880, A., 204.

influence of different kinds of, on the amount of ozone formed (GIANNETTI and VOLTA), 1875, 607.

production of ozone by the (GIANNETTI and VOLTA), 1876, ii., 378.

retrogradation produced by the, during the conversion of oxygen into ozone (HAUTEFEUILLE and CHAPPUIS), 1882, A., 688.

combination of oxygen and hydrogen by the (DEHÉRAIN and MAQUENNE), 1882, A., 360.

of the chloride of silver battery (DE LA RUE and MÜLLER), 1876, i., 334; 1880, A., 203; 1882, A., 258.

of a condenser, thermic laws of (VILLARI), 1882, A., 447, 678.

dark, formation and decomposition of binary compounds by the (BERTHELOT), 1876, ii., 596.

silent (P. and A. THENARD), 1873, 1093; (BERTHELOT), 1879, A., 435; (HAUTEFEUILLE and CHAPPUIS), 1881, A., 3.

## ELECTROCHEMISTRY—

- Electric discharge**, silent, production and action of the (BOILLOT), 1873, 713.  
 active properties acquired by some gases under the influence of the (CHABRIER), 1873, 29.  
 combination of hydrogen with cyanogen under the influence of the (BOILLOT), 1873, 865.
- Electric lamp**, smoke of the (PROCTOR), 1880, A., 81.  
 incandescent, for photographic purposes (BOLAS), 1882, A., 1240.
- Electric light**, pure carbons for the (JACQUELAIN),<sup>†</sup> 1882, A., 1142.  
 manufacture of carbon points for the (CARRÉ), 1877, ii., 270.  
 effect produced by the admixture of foreign substances with charcoal in the production of carbon points for the (GAUDUIN), 1877, ii., 104.  
 influence of the, on vegetation, and on certain physical principles involved (SIEMENS), 1881, A., 962; 1882, A., 326, 639.
- Electric machines**, comparison of different (MASCART), 1873, 839.  
 on Holtz's principle (LEYSER), 1874, 123, 220, 766.  
 frictional, a simple condensing collector for (ROBERTS), 1874, 766.
- Electric problems**, geometric solution of some (PICKERING), 1875, 39.
- Electric spark**, continuous spectrum of the (AET), 1879, A., 765.  
 spectrum produced by the, in a compressed gas (CAZIN), 1878, A., 357.  
 thermic and galvanometric laws of the (VILLARI), 1879, A., 576.  
 decomposition of silicon hydride by the (OGIER), 1879, A., 767.  
 chemical reactions of the, in the formation of persulphuric oxide (BERTHELOT), 1878, A., 554.
- Electric tension**, differences of, between liquids in contact, with special reference to the state of concentration (KITTLER), 1881, A., 491; 1882, A., 687.  
 fixation of nitrogen on organic substances under the influence of feeble (BERTHELOT), 1877, ii., 862.
- Electric**. See also Electrical and Electrolytic.

## ELECTROCHEMISTRY—

- Electrical behaviour** of aluminium (DUCRETET), 1876, ii., 46; (V. BEETZ), 1878, A., 2.  
 of metals dipped in water or saline solutions, effect of sunlight, etc., on (HANKEL), 1877, ii., 818.  
 of oils and other non-conducting substances (SYMONS), 1875, 328.  
 of plant and animal forms (BURDON SANDERSON), 1874, 427; 1882, A., 638; (KUNKEL), 1882, A., 638.
- Electrical resistance** of a vacuum (EDLUND), 1882, A., 353.  
 of gases (EDLUND), 1882, A., 681.  
 of flame (HORPE), 1878, A., 2.  
 of liquids at high pressures (HERWIG), 1877, ii., 161.  
 of certain copper-tin alloys, estimation of (LODGE), 1880, A., 687.  
 of metals (BENOIT), 1873, 832.  
 of incandescent platinum (NICHOLS), 1882, A., 354.  
 of selenium (EARL OF ROSSE), 1874, 861; (FORSSMAN), 1878, A., 360.  
 action of light on the (SALE), 1873, 998.  
 See also Conductivity.
- Electrical phenomena**, relations of, to capillary phenomena (LIPPMANN), 1873, 1094; 1874, 766.
- Electrical properties** of beeswax and of lead chloride (AYRTON), 1879, A., 427.  
 of indium (ERHARD), 1882, A., 262.
- Electrical**. See also Electric and Electrolytic.
- Electricity**, nature of (EDLUND), 1874, 123, 220, 766; (HERWIG), 1874, 766.  
 modern development of Faraday's conception of (V. HELMHOLTZ), 1881, T., 277.  
 production of, by mechanical actions (JOUIN), 1873, 839; 1874, 766; 1875, 38.  
 production of, by contact of heterogeneous metals (EXNER), 1881, A., 864.  
 excitation of, by the contact of solid and gaseous bodies (V. BEETZ), 1879, A., 345.  
 development of, by pressure in hemihedral crystals with inclined faces (J. and P. CURIE), 1881, A., 2, 338.

## ELECTROCHEMISTRY—

- Electricity**, development of, in hemimorphous crystals by alteration of pressure in the direction of the symmetrical axes (HANKEL), 1881, A., 958.
- development of, by the action of pressure on tourmaline (J. and P. CURIE), 1881, A., 338.
- direct transformation of radiant heat into (HANKEL), 1880, A., 838.
- distribution of, on the surface of conductors (EDLUND), 1874, 15.
- action of incandescent bodies on the transmission of (DOULIOT), 1874, 333.
- refraction of (TRIBE), 1881, A., 963; 1882, A., 260.
- unipolar conduction of, through gas strata of different conductivity (BRAUN), 1876, i., 668.
- thermic theory of (HOORWEG), 1881, A., 70, 777.
- discharge of, in gases and high vacua (NARR), 1881, A., 70.
- in electrolytes (BUDDE), 1876, i., 865.
- action of, on flames, liquids, powders, gases and solids (NEYRENEUF), 1873, 839, 1093; 1874, 757; 1875, 39.
- detection of alternations of, by means of flame (FUCHS), 1876, i., 667.
- influence of, on mixtures of marsh gas and carbon dioxide, and of hydrogen and carbon monoxide (P. and A. THENARD), 1873, 864.
- action of, on oxygen (BRODIE), 1873, 348.
- action of, on atmospheric air (BÖTTGER), 1874, 653.
- of plants (RANKE), 1873, 713.
- etching on glass by (PLANTÉ), 1878, A., 348.
- estimation in mechanical units of the quantity of, produced by a galvanic element (BRANLY), 1874, 332.
- atmospheric (MASCART), 1880, A., 783.
- influence of, on the growth of grapes (MACAGNO), 1881, A., 931.
- influence of, on the growth of plants (GRANDEAU), 1878, A., 908; 1879, A., 818; (NAUDIN), 1880, A., 909.

## ELECTROCHEMISTRY—

- Electricity**, atmospheric, absorption of free nitrogen by the proximate principles of vegetables under the influence of (BERTHELOT), 1877, i., 222.
- statical distillation of liquids under the influence of (GERNEZ), 1879, A., 997.
- Electrified bodies**, action of flame on (DOULIOT), 1876, i., 510.
- Electrocapillary phenomena** (BEQUEREL), 1873, 1185; 1875, 328, 528, 529; 1876, i., 511; 1877, ii., 820.
- influence of albuminoid substances on (ONIMUS), 1874, 528.
- Electro-capillary thermometer** (DEBRUN), 1880, A., 205.
- Electrochemical** actions, and electro-metallurgy (THENARD), 1877, ii., 269.
- equivalent of silver (KOHLEAUSCH), 1874, 113.
- relations of metals in solutions of potassium salts (GORE), 1881, A., 962; 1882, A., 261.
- Electrodeposition**, use of palladium instead of silver in (FRANTZ), 1877, ii., 239.
- production of metallic films on the surface of organic substances, for the purpose of (CAZENEUVE), 1876, ii., 450.
- of a metal, changes of volume accompanying (BOUTY), 1881, A., 671.
- of metals, and construction of metal-covered glass specula (WRIGHT), 1878, A., 251.
- of aluminium, magnesium, cadmium, bismuth, antimony, and palladium (BERTRAND), 1877, i., 161.
- of bismuth (BERTRAND), 1876, i., 451.
- of brass (HESZ), 1880, A., 425.
- of cobalt (BÖTTGER), 1877, ii., 375; (GAIFFE), 1878, A., 1019.
- of gold (EBERMAYER), 1878, A., 178.
- of nickel (MERRICK), 1873, 204; (ANON.), 1874, 928; (KAYSER), 1878, A., 537.
- Electrodes**, polarisation of (BOUTY), 1882, A., 912.
- polarisation of, in water free from air (FLEMING), 1877, i., 266.
- depolarisation of, by metallic solutions (LIPPMANN), 1878, A., 926.

## ELECTROCHEMISTRY—

- Electrodes**, disintegration of, by positive electricity (REITLINGER and WÄCHTER), 1882, A., 448.  
 radiant matter from (PULUJ), 1882, A., 3.  
 wearing-away of, in the production of the electric arc (HERWIG), 1874, 429.
- Electrolysis** (JANEČEK), 1876, i., 182; (SMITH), 1881, A., 3; (DEWAR), 1881, A., 962; (BERTHELOT), 1882, A., 353; (TOMMASI), 1882, A., 789.  
 theory of (TRIBE), 1876, ii., 36.  
 mechanical theory of (DOMALIP), 1874, 645.  
 limits of (BERTHELOT), 1882, A., 260.  
 circuit produced by the reaction current of (MOSER), 1881, A., 1092.  
 with evolution of hydrogen at both poles (ELSÄSSER), 1877, i., 678; 1878, A., 545.  
 application of, to the determination of molecular weights (LADENBURG), 1873, 26.  
 use in dyeing and printing (GOPPELSROEDER), 1882, A., 1338.  
 oxidation of alcohols by (RENARD), 1880, A., 24.  
 Keith's process for desilvering and refining raw lead by (ANON.), 1879, A., 288, 410.  
 used in copper metallurgy (BODE), 1879, A., 760.  
 water in, is not decomposed by the current (BOURGOIN), 1873, 27.  
 and electrical conduction of chemical compounds (BLEEKRODE), 1878, A., 464.  
 of water (EXNER), 1879, A., 577; (STREINTZ), 1881, A., 962; (TOMMASI), 1882, A., 134, 353, 1019; (DEHÉRAIN and MAQUENNE), 1882, A., 459.  
 under pressure (BOUVET), 1879, A., 293.  
 by oxidisable electrodes, phenomena accompanying the (GLADSTONE and TRIBE), 1876, ii., 152.  
 of various liquids, by means of carbon electrodes (BARTOLI and PAPASOGLI), 1882, A., 406, 850.  
 of solutions of antimony chloride (PFEIFER), 1882, A., 467.  
 of hydrogen peroxide (SCHÖNE), 1879, A., 878; (BERTHELOT), 1882, A., 1157.

## ELECTROCHEMISTRY—

- Electrolysis** of iron in solution under the influence of a powerful electro-magnetic solenoid (v. JACOBI), 1873, 831.  
 of certain metallic chlorides in solution (GLADSTONE and TRIBE), 1876, i., 182.  
 of phosphoric acid solutions with electrodes of gas-coke and graphite (BARTOLI and PAPASOGLI), 1882, A., 852.  
 of solutions of potassium chlorate and nitrate (GLADSTONE and TRIBE), 1878, T., 145.  
 of solutions of sodium carbonate and of sodium hydrogen carbonate (FAVRE and ROCHE), 1874, 861.  
 of sulphurous acid solutions (GUEROUT), 1877, ii., 820.  
 of organic compounds in aqueous solutions (HABERMANN), 1881, A., 215.  
 of acetic acid (RENARD), 1880, A., 27.  
 of amygdalin (COPPOLA), 1878, A., 677.  
 of aniline and of anthraquinone (GOPPELSROEDER), 1876, ii., 308.  
 of benzene (RENARD), 1880, A., 802.  
 of ethylene glycol and of glucose (RENARD), 1880, A., 26.  
 of ethylic and methylic hydrogen sulphates (RENARD), 1880, A., 25.  
 of formic acid (BUNGE), 1877, ii., 311; 1881, A., 798; (RENARD) 1880, A., 27.  
 of glycerol (RENARD), 1880, A., 25; (BARTOLI and PAPASOGLI), 1882, A., 407.  
 of itaconic and mesaconic acids (AARLAND), 1873, 377.  
 of malonic acid (BOURGOIN), 1880, A., 462.  
 of the potassium salt of malonic acid (v. MILLER), 1879, A., 916.  
 of mannitol (RENARD), 1880, A., 25.  
 of methylsuccinic acid (REBOUL and BOURGOIN), 1877, ii., 442.  
 of aqueous solutions of oxalic acid (BUNGE), 1876, ii., 286; 1877, i., 455; (RENARD), 1880, A., 27.  
 of phenol (GOPPELSROEDER), 1876, ii., 308; (BARTOLI and PAPASOGLI), 1882, A., 406.  
 of the potassium salt of phenylacetic acid (SLAWIK), 1875, 58.  
 of salicin (COPPOLA), 1878, A., 677.  
 of terebenthene (RENARD), 1880, A., 479.



## ELECTROCHEMISTRY—

**Electrolytes**, are salts? (HITTORF), 1879, A., 1.

distribution of the current in (MÜLLER), 1874, 866; 1875, 123.

magnetised, some effects of transmitting electric currents through (GORE), 1882, A., 566.

effect of heat on a voltaic circuit completed by an (HELLESEN), 1877, i., 429.

electricity in (BUDDE), 1876, i., 865.

electric distribution as manifested by that of the radicles of (TRIBE), 1881, A., 963.

conductivity of (BERGGREN), 1878, A., 101.

existence of dielectrical polarisation in (COLLEY), 1882, A., 789.

**Electrolytic decomposition** of carbonic oxide (BRODIE), 1873, 744.

of mercury salts (HANNAY), 1873, 568.

diffusion of liquids (GORE), 1881, A., 963; 1882, A., 565.

**Electrolytic estimations** (LUCKOW), 1880, A., 282; (SCHICHT; FRESSENIUS and BERGMANN), 1880, A., 747; (CLASSEN and V. REIS), 1881, A., 1081; (ANON.), 1882, A., 425; (CLASSEN), 1882, A., 896.

of metals (WRIGHTSON), 1877, i., 340.

report on the processes of Classen and v. Reis for the (FRANCKEN), 1882, A., 1320.

of mercury (CLARKE), 1878, A., 916; 1879, A., 976.

of nickel (MERRICK), 1873, 204; (ANON.), 1877, ii., 925; (OHL), 1880, A., 583; (FRESSENIUS and BERGMANN), 1880, A., 751.

of silver (FRESSENIUS and BERGMANN), 1880, A., 747.

of zinc (REINHARDT and IHLE), 1881, A., 1170.

of zinc and lead in minerals (PARODI and MASCAZZINI), 1877, ii., 804.

**Electrolytic extraction** of zinc (ANON.), 1882, A., 431.

**Electrolytic gases**, permeation of platinum by (V. HELMHOLTZ), 1877, ii., 161, 271.

**Electromagnetic motors**, use of secondary or polarisation batteries as (V. JACOBI), 1874, 766.

**Electromagnets**, maximum magnetic effect in (RAYNAUD), 1873, 839.

## ELECTROCHEMISTRY—

**Electromagnets**, action of, on various minerals, and their use for their mechanical separation (DOELTER), 1882, A., 656, 1173; (V. PEBAL), 1882, A., 810.

**Electrometallurgy**, use of, in assaying (ANON.), 1876, ii., 115.

and electrochemical actions (THEXARD), 1877, ii., 269.

**Electromotive force** produced by the flow of liquids through tubes (EDLUND), 1879, A., 998.

and affinity, relations between (BECQUEREL), 1874, 218; 1876, i., 333, 511.

estimation of chemical affinity in terms of (WRIGHT and RENNIE), 1880, A., 686; (WRIGHT), 1881, A., 959.

voltaic standard of (CLARK), 1873, 472.

of very thin gas strata (KOHLE-RAUSCH), 1873, 348.

and thermoelectric force of some metallic alloys in contact with copper (SUNDELL), 1874, 766.

of galvanic couples (THOMSEN), 1881, A., 216; (FROMME), 1881, A., 490.

change in the, by heat (VOLLER), 1874, 219.

of the zinc-carbon couple (BERTHELOT; TOMMASI), 1882, A., 1156.

of gas elements (PEIRCE), 1879, A., 998.

of a Grove's element in terms of Siemens-Weber units (RIECKE), 1879, A., 998.

of palladium in the gas battery (VILLARI), 1875, 123.

of platinum charged with free chlorine (MACALUSO), 1874, 1044.

**Electromotive order** of certain metals in solutions of potassium cyanide (SKEY), 1876, ii., 588.

**Electromotors**, elements of organised structures considered as (BECQUEREL), 1876, i., 278.

**Electro-optic observations** on various liquids (KERR), 1880, A., 599; 1882, A., 678.

**Electroplating**, estimation of potassium cyanide in baths used for (WITTSTEIN), 1874, 1012.

See also Electrodeposition.

**Electro-silicic light** (PLANTÉ), 1877, ii., 270.

**Electrospectrum tube** (DELACHANAL and MERMET), 1874, 1125; 1876, ii., 35.

## ELECTROCHEMISTRY—

**Equipotential** figures obtained by the electrochemical method, theory of (GUÉBHARD), 1882, A., 1156.

systems, reversibility of the electrochemical method for the determination of (GUÉBHARD), 1882, A., 352.

**Galvanic couple.** See Couple.

currents. See Currents.

deposits, pressures produced by (BOUTY), 1879, A., 576.

element. See Cell.

experiments (DRECHSEL), 1880, A., 300.

**Galvanising** of iron (ANON.), 1874, 719; (THUM), 1876, i., 793; (JONES, SHEPARD and SEAMANN), 1882, A., 119.

**Galvanism**, thermic theory of (HOORWEG), 1881, A., 70, 777.

**Galvanometer**, absolute (GUTHRIE), 1875, 39.

a new tangent-(MÜLLER), 1874, 766.

**Galvanometers**, maximum magnetic effect on, and resistance of (RAYNAUD), 1873, 839.

**Galvanoscope**, capillary by Siemens (GAWALOWSKI), 1875, 39.

**Geissler's tube**, illumination of the lines of molecular pressure in a (CROOKES), 1879, A., 573.

magneto-chemical phenomena in (CHAUTARD), 1876, i., 29.

**Gramme machine**, effects produced in a vacuum by the current from a (JAMIN and MANEUVRIER), 1882, A., 913.

**Induction spark**, condensed discharge of the (DU MONCEL), 1873, 830.

**Insulators**, experimental determination of the dielectric constants of (KESSLER), 1875, 38.

**Ions**, transference of (KIRMIS), 1879, A., 193.

**Leyden jars**, reduction of observations on (PERRY and AYRTON), 1881, A., 963.

**Lichtenberg figures**, explanation of (REITLINGER and WÄCHTER), 1882, A., 448.

**Nobili's rings** on gold (SCHIEL), 1877, i., 677.

**Ohm**, determination of the (RAYLEIGH and SCHUSTER), 1881, A., 963.

**Pile**, pocket, with jointed elements (PULVERMACHER), 1882, A., 447.  
voltaic, constant and powerful (REYNIER), 1880, A., 686.  
electrostatic phenomena in (ANGOT), 1874, 1125.

## ELECTROCHEMISTRY—

**Pile**, voltaic, chemical energy of (TOMMASI), 1882, A., 1155.

See also Cells.

**Polarisation** (MÜLLER), 1874, 866; 1875, 123; (EXNER), 1879, A., 577; 1881, A., 775; (V. BEETZ), 1880, A., 837; 1881, A., 490.

and Smee's element (HALLOCK), 1882, A., 1155.

variation in friction produced by (KROUCHKOLL), 1882, A., 1257.

capacity of (BLONDLOT), 1879, A., 864.

in liquids free from gas (V. HELMHOLTZ), 1874, 644.

of electrodes (BOUTY), 1882, A., 912.

of electrodes in water free from air (FLEMING), 1877, i., 266.

of aluminium (V. BEETZ), 1876, ii., 267.

of platinum (V. HELMHOLTZ), 1873, 463; (EXNER), 1879, A., 578.

dielectric, existence of, in electrolytes (COLLEY), 1882, A., 789.

changes in the surface of platinum and palladium produced by (KOCH), 1879, A., 1005.

**Rheocord** (MÜLLER), 1874, 220, 766.

**Resistance.** See Electrical resistance.

**Secondary batteries.** See Accumulators.

**Specific inductive capacity** (NEYRENEUF), 1878, A., 104.

of glass and liquids (HOPKINSON), 1881, A., 963.

**Tangent-compass**, new (MÜLLER), 1874, 220, 766.

**Thermal electrolysis** (GLADSTONE and TRIBE), 1881, A., 868.

**Thermoelectric** behaviour of metals (V. FITZGERALD-MINARELLI), 1876, i., 866.

of aqueous solutions with platinum electrodes (GORE), 1881, A., 963.

cells (V. WALTENHOFEN), 1873, 465; (CLAMOND), 1874, 861.

electromotive forces, developed by the contact of a metal and a liquid, measure of (BOUTY), 1881, A., 336.

force and electromotive force of some metallic alloys in contact with copper (SUNDELL), 1874, 766.

of zinc and solution of zinc sulphate (HERMANN), 1877, ii., 271.

## ELECTROCHEMISTRY—

**Thermoelectric** properties and crystalline forms, relations between (FIEDEL), 1874, 538.

of fluorspar (HANKEL), 1878, A., 2; 1881, A., 215, 337.

of liquids (GORE), 1880, A., 431.

temperature determinations (ROSENTHAL and MOELLER), 1878, A., 104.

**Units** in absolute electrical measurements (LIPPMANN), 1881, A., 334.

Siemen's, reduction of, to absolute measure (KOHLENSCH), 1874, 766.

**Voltaic** action, theory of (BROWN), 1879, A., 426.

contact theory of (AYRTON and PERRY), 1878, A., 363.

arc, action of cold on (TOMMASI), 1882, A., 259.

influence of the temperature of, on barium and calcium sulphates (EREMIN), 1882, A., 362.

condenser (D'ARSONVAL), 1880, A., 521.

currents. See Currents.

element. See Cells.

**Voltameters**, reduction of observations on (PERRY and AYRTON), 1881, A., 963.

isolation of the elements, by the action of the electric currents in (MARTIN), 1874, 950.

**Wheatstone's bridge** (BROUGH), 1874, 766.

best arrangement of, for measuring a given resistance with a given galvanometer and battery (ANON.), 1873, 348.

**Elements**, nature of (GROSHANS), 1873, 132; (BERTHELOT), 1874, 426.

atomic weights of the, relation between the (WÄCHTER), 1878, A., 468; (FEDOROFF), 1882, A., 358.

relation between the atomic weight and the chemical and physical properties of the (BAYLEY), 1882, A., 359.

metallic, relation between the atomic weight, hardness, and specific gravity of the (LEA), 1874, 964; (BOTTONE), 1875, 232.

and their compounds, spectra of the (CIAMICIAN), 1879, A., 685; 1880, A., 361; 1882, A., 349.

identity of spectral lines of different (LIVING and DEWAR), 1881, A., 957; 1882, A., 253.

**Elements** present in the sun's atmosphere which produce the inversion of the spectral lines (LOCKYER), 1874, 424; 1878, A., 357.

photographs of the ultra-violet spectra of (HARTLEY), 1882, T., 84.

determination of the true, by the action of electric currents in the voltameter (MARTIN), 1874, 950.

gaseous, electromotive power of (PIERCE), 1879, A., 998.

general relations between the chemical mass of, and the heat of formation of their compounds (BERTHELOT), 1880, A., 688.

solid, expansion of, by heat (WIEBE), 1878, A., 549; 1879, A., 1002; 1880, A., 88.

specific heat and expansion of (WIEBE), 1880, A., 783.

thermochemical relation between the boiling and melting points of (WIEBE), 1879, A., 690.

relation between the melting points of, and their coefficients of expansion by heat (CARNELLEY), 1879, A., 588.

influence of the compressibility of, on the compressibility of their compounds (TROOST), 1882, A., 1160.

polymorphism of (HERMANN), 1878, A., 702.

**Elemi**, chemical constituents of (PHOEBUS), 1876, i., 614; (BURI), 1876, ii., 422.

**Elemi-resin**, reduction-products of (CIAMICIAN), 1879, A., 69.

**Elemic acid** (BURI), 1878, A., 439.

**Eleonorite** (NIES), 1881, A., 525.

**"Ellagene"** (OSER and BÖCKER), 1880, A., 394.

**Ellagic acid** (BARTH and GOLDSCHMIEDT), 1879, A., 930.

occurrence of, in pine-bark (STROHMER), 1882, A., 82.

formation of, by the action of phosphorus pentachloride on gallic acid (SCHIFF), 1874, 270.

constitutional formulæ of (BARTH and GOLDSCHMIEDT), 1879, A., 932; (SCHIFF), 1880, A., 43.

action of nascent hydrogen on (COBENZL), 1882, A., 405.

action of potash on (BARTH and GOLDSCHMIEDT), 1879, A., 932.

reduction of, by zinc-dust (BARTH and GOLDSCHMIEDT), 1878, A., 733.

derivatives of (REMBOLD), 1876, i., 592.

**Elm** (*Ulmus campestris*), composition of (CHURCH), 1877, ii., 211.

- Elm bark**, chemistry of (JOHANSON), 1877, i., 720.
- Elodea canadensis*, nutritive value of (HOFFMEISTER), 1880, A., 500.
- Emeralds** (WILLIAMS), 1874, 28.
- composition of (WILLIAMS), 1877, ii., 574.
- volume-constitution of (SCHRÖDER), 1874, 876.
- cause of the green colour of (ROSS), 1882, A., 1269.
- colouring matter of (WILLIAMS), 1874, 28.
- from Santa Fé di Bogota (VREA), 1882, A., 575.
- Emery**, manufacture of (ANON.), 1874, 728.
- Emery-stone**, water-glass (VAN BAERLE), 1876, i., 124.
- Emetine**. See under Alkaloids.
- Emodin** (LIEBERMANN), 1876, i., 251; 1877, i., 610.
- from the bark of *Rhamnus Frangula* (LIEBERMANN and WALDSTEIN), 1877, i., 477.
- amount of, in rhubarb (PRZEWALSKI; BEILSTEIN), 1882, A., 1126.
- Emplectite** (DAW), 1880, A., 222.
- Emulsion**, formation of (QUINCKE), 1879, A., 549.
- collodion. See under Photochemistry.
- Enamel** for frosted glass making, preparation of (BENRATH), 1873, 1171.
- for cast and wrought iron (RAETZ), 1879, A., 755; (BERSCH), 1880, A., 833.
- for metals, and fancy hardware (ANON.), 1881, A., 208.
- Enargite** (FRENZEL), 1878, A., 708.
- of the Famatina range (STELZNER), 1874, 1069.
- from the Matzenköpfl, near Brixlegg, in Tyrol (v. ZEPHAROVICH), 1881, A., 397.
- from Utah (SILLIMAN), 1874, 344.
- Encephalin** (PARCUS), 1882, A., 235.
- Enninyl alcohol** (*ethylidiallylcarbinol*) (SMIRENSKY), 1882, A., 488.
- Ennoic acid**. See Nonoic acid.
- Enstatite**, artificial (MEUNIER), 1882, A., 286.
- in the olivine nodules of the Gröditzberg (TRIPPKE), 1879, A., 514.
- from Norway (BRÖGGER and REUSCH), 1876, ii., 52; (BRÖGGER and VOM RATH), 1877, ii., 718.
- of Russdorf in Saxony (DATHE), 1876, ii., 389, 612.
- from Snarum (SELIGMANN), 1881, A., 694.
- Enstatite** from South Africa (MASKE-LYNE), 1879, A., 513.
- See also Magnesium silicate.
- Enysite** (COLLINS), 1877, ii., 282.
- ENZYMES**. See also Ferments.
- Enzymes** (MÜNTZ), 1875, 1208; (NASSE), 1876, i., 412; (ZULKOWSKI and KÖNIG), 1876, i., 958; (ROBERTS), 1881, A., 1051.
- produced by the morbid growth of the bioplasm of the yolk of egg (THOMSON), 1879, A., 478.
- of the organism (GRÜTZNER), 1876, ii., 648; 1878, A., 441.
- in plants (KOSMANN), 1877, i., 488; (KRAUCH), 1878, A., 996; 1880, A., 175.
- action of (HÜFNER), 1874, 600; 1875, 662; (WURTZ), 1882, A., 536.
- behaviour of, at high temperatures (HUEPPE), 1882, A., 317.
- behaviour of, in the organism (FALK), 1882, A., 637.
- influence of compressed oxygen on (BERT), 1876, i., 93.
- action of hydrogen dioxide on (BERT and REGNARD), 1882, A., 1122.
- influence of salicylic acid and other antiseptics on (SCHÄR), 1876, i., 99.
- influence of certain substances on (DERMER), 1882, A., 881.
- action of thymol on (PESCHECHONOFF), 1874, 999.
- diastatic (DUMAS), 1873, 82; (v. WITTICH), 1873, 515; (MUNK), 1877, ii., 351.
- action of, on starch, dextrin and maltose (v. MERING), 1882, A., 749.
- action of acids and alkalis on (EESTEIN and MÜLLER), 1875, 1210.
- digestive, produced during panification (SCHEURER-KESTNER), 1880, A., 776.
- of the juice of the fig-tree (BOUCHUT), 1880, A., 728.
- separation of (PASCHUTIN), 1873, 1064.
- fibrin, preparation of (HAMMARSTEN), 1879, A., 474.
- derivative of the (SCHMIDT), 1873, 180; 1876, i., 945; 1877, ii., 483; 726.
- glycogenic, transformation of glycogen into grape-sugar by (SEEGER), 1877, ii., 911; 1879, A., 548.
- hydrolytic, of the pancreas and small intestines (BROWN and HERON), 1880, A., 903; 1881, A., 114.
- pancreatic (HERTER), 1882, A., 753.



**Enzymes**, pancreatic, decomposition of  
gelatin and albumin by, in absence  
of air (JEANNERET), 1877, ii., 630.  
peptone-forming, in saliva (MUNK),  
1877, ii., 347.  
saccharifying (SEEGEN and KRATSCHE-  
MER), 1877, ii., 505.  
of the blood (PLÓSZ and TIEGEL),  
1873, 1245.  
of urea. See *Bacillus uree*.

## ENZYMES—

**Diastase** (BASWITZ), 1878, A., 903;  
1880, A., 132; (ZULKOWSKI), 1879,  
A., 660; (KJELDAHL), 1880, A.,  
562; 1881, A., 115.  
and the peptone-forming ferment of  
plants (V. GORUP-BESANEZ), 1875,  
1286; 1876, i., 738; ii., 322;  
(V. GORUP-BESANEZ and WILL),  
1876, ii., 322; (KRAUCH), 1882,  
A., 880.  
and synaptase, microzymes of  
germinated barley and sweet  
almonds as producers of (BÉ-  
CHAMP), 1877, i., 106.  
nature of (BROWN and HERON),  
1879, T., 650.  
composition of (KRAUCH), 1878,  
A., 996; 1880, A., 175; (ZUL-  
KOWSKI and RENNER), 1880, A.,  
561.  
fermenting power of (KJELDAHL),  
1880, A., 562; 1881, A., 115.  
action of, on glycogen and starch  
(MUSCULUS and V. MERING),  
1879, A., 370.  
action of, on starch (MUSCULUS  
and GRUBER), 1878, A., 778;  
(MÄRCKER), 1878, A., 969; (BAS-  
WITZ), 1878, A., 903; 1880, A.,  
132.  
action of, on starch in presence of  
hydrochloric acid or pure gastric  
juice (DEFRESNE), 1880, A., 330.  
action of, on starch-paste (HERZ-  
FELD), 1880, A., 310; 1881, A.,  
1024.  
digestive, and rennet (DUCLAUX),  
1882, A., 437.  
liver (BERNARD), 1878, A., 82.  
of "kôji" (ATKINSON), 1881, A.,  
1059.

**Invertase** (*invertin*) (BARTH), 1878,  
A., 590; (DONATH), 1878, A.,  
802.

temperature at which it is destroyed  
(MAYER and HAGEMANN), 1882,  
A., 378.

influence of, on the fermentation  
of cane-sugar (ANON.), 1882, A.,  
1277.

## ENZYMES—

**Papain** (WURTZ and BOUCHUT;  
WITTMACK), 1879, A., 1048;  
(PECKOLT), 1880, A., 128;  
(WURTZ), 1881, A., 58, 750;  
(GEISSLER), 1882, A., 1118.  
effect of the introduction of, into  
the organism (ROSSBACH), 1882,  
A., 1309.

**Pepsin** (GAUTIER), 1882, A., 752;  
(BÉCHAMP), 1882, A., 752, 1118;  
(CHAPOTEAUT), 1882, A., 1220.

insoluble modification of (GAUTIER),  
1882, A., 877.

formation of, in Batrachians (V.  
ŚWIECICKI), 1877, i., 100.

formation and separation of (GRÜTZ-  
NER), 1877, ii., 204.

preparation of (SELLEDÉN), 1874,  
724.

different actions of (FINKLER), 1875,  
1043.

regeneration of spent albumin by  
means of (WAGNER; WITZ), 1876,  
ii., 229.

and hydrochloric acid, digestion of  
albuminous bodies by (SCHMIDT),  
1877, i., 101.

and the digestion of fibrin without  
it (WOLFFHÜGEL), 1873, 761.

acceleration of coagulation by  
(SCHMIDT), 1873, 186.

chemical valuation of (RENNARD),  
1875, 1296.

testing of (PETIT), 1880, A., 424.

estimation, colorimetric, of (GRÜTZ-  
NER), 1874, 609; 1876, ii., 117.

*iso*Pepsin (FINKLER), 1877, i., 483.

**Ptyalin** (WATSON), 1879, T., 540;  
(KJELDAHL), 1880, A., 562.

action of, on starch, in presence of  
gastric juice (DEFRESNE), 1880,  
A., 330.

acceleration of coagulation by  
(SCHMIDT), 1873, 186.

**Rennet**, coagulation of milk by  
(SCHMIDT), 1877, i., 101; (MAY-  
ER), 1881, A., 1183; 1882, A.,  
1149.

action of, on casein (HAMMARSTEN),  
1880, A., 172.

estimation of matter precipitated  
from milk by (MANETTI and  
MUSCO), 1877, ii., 940.

diastase (DUCLAUX), 1882, A., 437.

essence, preparation of (SOXHLET),  
1878, A., 826; (NESSLER), 1882,  
A., 1149.

**Trypsin** in pancreas (PODOLINSKI),  
1877, i., 103; (ROBERTS), 1881, A.,  
1051.

## ENZYMES—

**Zymases** (BIROT), 1875, 374; (BÉCHAMP), 1880, A., 816.

**Eosin.** See under Colouring Matters.

**Eosphorite** (BRUSH and DANA), 1879, A., 20; 1881, A., 530.

and childrentite, relation between (BRESH and DANA), 1881, A., 365.

*Eperua falcata* (HIRSCH), 1880, A., 168.

**Epichlorhydrin** (LAUFER), 1877, i., 291.

preparation of (PREVOST), 1876, i., 61.

constitution of (HARTENSTEIN), 1873, 1218; (HANRIOT), 1880, A., 457.

physical properties of (THORPE), 1880, T., 206.

action of ammonia on (HANRIOT), 1879, A., 1031.

action of, on aniline and its homologues (v. HOERMANN), 1882, A., 1067.

action of bromine on (GRIMAU and ADAM), 1880, A., 457.

action of ethylic chloroformate on, in presence of sodium amalgam (KELLY), 1879, A., 305.

action of hydriodic acid on (DA SILVA), 1881, A., 1123.

action of hydrocyanic acid on (v. HOERMANN), 1879, A., 449.

action of methylamine on (REBOUL), 1881, A., 1122.

action of nitric acid on (v. RICHTER), 1880, A., 32.

action of potassium cyanate on (THOMSEN), 1879, A., 217.

action of sodium on (HANRIOT), 1879, A., 1031; 1880, A., 457.

derivatives of (BRESLAUER), 1880, A., 29.

**Epicyanhydrin** (ERLENMEYER), 1880 A., 544.

**Epidote** (VOM RATH), 1881, A., 550.

from the Allochetthal (DOELTER), 1876, i., 887.

from near Greenwood, Albemarle Co., Virginia (LIPITT), 1882, A., 24.

from Mal Inverno (DOELTER), 1876, i., 887.

in the syenite of the Ravin d'Enval, near Riom (Puy-de-Dôme) (GONNARD), 1882, A., 292.

chemical formula of (LUDWIG), 1873, 251.

crystal forms of (BÜCKING), 1880, A., 534.

Sulzbach, optical properties of (KLEIN), 1874, 557.

comparison of zoisite with (TSCHERMAK and SIPÖCZ), 1881, A., 1004.

**Epidote**, corrosion-figures of magnesia-mica and (BAUMHAUER), 1875, 873.

parallel combination of different varieties of (BAUER), 1881, A., 379.

**Epihydrin acetate.** See Acetylglycide.

**Epihydrin alcohol.** See Glycide.

**Epihydrincarboxylic acid**, action of acetic chloride on (HARTENSTEIN), 1873, 1217.

**Epistilbite**, monoclinic form to which, should be referred (DES CLOIZEAUX), 1881, A., 397.

**Epsomite** (*reichardtite*), a new mineral from Stassfurt (KRAUSE), 1876, i., 347.

natural crystals of, of large size (DE ROUVILLE), 1879, A., 358.

See also Magnesium sulphate.

**Equilibrium**, chemical. See Affinity.

**Equinic acid** from fresh mare's milk (DUVAL), 1876, i., 901.

**Equivalence**, chemical (MILLS and SMITH), 1879, A., 876; (MILLS and WALTON), 1880, A., 437; (MILLS and HOGARTH), 1880, A., 438; (MILLS and BICKET; MILLS and HUNT), 1882, A., 689.

**Erbia.** See Erbium oxide.

**Erbium** (HUMPHIDGER and BURNEY), 1879, T., 111; (CLEVE), 1880, A., 157; 1881, A., 350.

spectrum of (LECOQ DE BOISEAUDRAN), 1873, 829.

salts (CLEVE and HÖGLUND), 1873, 138; (CLEVE), 1881, A., 350.

nitrate, spectrum of (LECOQ DE BOISEAUDRAN), 1879, A., 862.

oxide (*erbia*) (LECOQ DE BOISEAUDRAN), 1880, A., 6.

heat produced by neutralisation of (THOMSEN), 1874, 430.

two new elements in (CLEVE), 1880, A., 7.

**Erdmannite**, composition of (ENGSTRÖM), 1878, A., 115.

**Ergot of rye** (DRAGENDORFF), 1876, ii., 531; 1878, A., 518.

and its liquid extract (GERRARD), 1875, 1272.

sclerotic acid, the active principle of (BUCHHEIM), 1876, i., 610; (ANON.), 1877, ii., 628.

alkaloids of (BLUMBERG), 1879, A., 269, 387.

amount of fat in (FICINUS), 1874, 177.

**Ergotinine** (TANRET), 1876, i., 405; 1878, A., 81, 679.

preparation of (BLUMBERG), 1879, A., 269, 387.

**Ericaceæ**, ethereal oils of some (KÖHLER), 1879, A., 641.

**Ericin** (SAVIGNY and COLLINEAU), 1882, A., 309.

*Erigeron canadensis*, oil of (VIGIER and CLOEZ), 1881, A., 1151; 1882, A., 64.

*Eriodendron anfractuosum* (kapok tree), composition and nutritive value of cake made from the seed of (REINDERS), 1877, i., 105.

*Eriodictyon californicum* (HOLZHAUER), 1881, A., 105.

**Erlanite** (FRENZEL), 1874, 447.

**Eruption** of Nisyros, recent (GORCEIX), 1873, 1212; 1874, 347, 561, 1073; 1875, 48.

**Eruptive rocks.** See Rocks.

**"Erythramylum"** (v. BRÜCKE), 1873, 395.

**Erythric acid** (*erythrin*) (HESSE), 1880, A., 255.

**Erythrin.** See also *Ethyltetra*bromofluorescein.

**Erythritol** (*erythrol*) (CLAËSSON), 1882, A., 819.

action of nitralizarin on (BRUNNER), 1882, A., 785.

action of phosphorus pentachloride on (BELL), 1879, A., 917.

fermentation of (FITZ), 1879, A., 664.

oxidation of (PRZYBYTEK), 1881, A., 402.

**Erythritoltetrasulphuric acid**, and its salts (CLAËSSON), 1879, A., 1033.

**Erythrocephalein** (PODWYSZOZKI), 1880, A., 720.

**Erythrochromium salts** (JÖRGENSEN), 1882, A., 1168.

**Erythroextrin** (v. BRÜCKE), 1873, 394; (MUSCULUS and GRUBER), 1878, A., 778; (BROWN and HERON), 1879, T., 640; (MUSCULUS and MEYER), 1881, A., 570.

*Erythronium Dens-canis*, composition of the bulbs of (DRAGENDORFF), 1878, A., 904.

*Erythrophleum guineense* and *E. Coumoujo* (GALLOIS and HARDY), 1876, ii., 532.

**Erythrophyll** (HOPPE-SEYLER), 1880, A., 53.

**Erythrosiderite** (VOM RATH), 1878, A., 475.

**Erythroxyanthraquinone** (*1-hydroxyanthraquinone*) (v. BAEYER and CARO), 1875, 67; (v. PERGER), 1879, A., 253, 724; (v. BAEYER), 1880, A., 654; (LIEBERMANN and TOPF), 1882, A., 856.

*Erythroxyton Coca* (KENNEDY), 1880, A., 169; (SHULL), 1880, A., 411.

**Erythrozoine**, and its optical properties (DES CLOIZEAUX), 1882, A., 281.

**Eserine.** See under Alkaloids.

**Esmarkite**, occurrence of, in Norway (BRÖGGER and REUSCH), 1876, ii., 52.

**Esparto**, an acid from (CROSS and BEVAN), 1880, A., 667.

fibre, chemistry of (CROSS and BEVAN), 1880, A., 666; 1881, A., 1121; 1882, T., 90.

**Essential oils.** See Oils, vegetable.

**Ethesine** (THUDICHUM), 1882, A., 538.

**"Etech-figures"** on the alums (KLOCKE), 1879, A., 439.

on quartz crystals (BAUMHAUER), 1879, A., 439.

on rock salt (SOHNCKE), 1876, ii., 273.

**Eterpene** (*ethylterpene*) (MEYER and SPITZER), 1876, ii., 515; (MEYER and PETRI), 1877, ii., 626; (SPITZER), 1877, ii., 789.

**Ethal.** See Hexadecylic alcohol.

**Ethaldehyde.** See Acetaldehyde.

*Ethidium septicum*, phytosterin from (HESSE), 1882, A., 729.

**Ethane** (THOMSEN), 1881, A., 565.

preparation of, by the copper-zinc couple (GLADSTONE and TRIBE), 1877, i., 566.

liquefaction of (CAILLETET), 1878, A., 20.

action of bromine on (MERZ and WEITH), 1879, A., 302.

derivatives, boiling points of (SABANÉEFF), 1881, A., 399.

halogen derivatives (STAEDEL and DENZEL), 1879, A., 212, 368; (DENZEL), 1880, A., 228.

vapour pressure of (STAEDEL), 1880, A., 618.

**Ethane, brom-.** See Ethylic bromide.

*s-dibrom-* (*ethylenic dibromide*) (ERLENMEYER and BUNTE), 1873, 1118; (TAWILDAROFF), 1874, 348.

physical properties of (THORPE), 1880, T., 177.

thermic constants for (BERTHELOT), 1879, A., 435.

distillation of mixtures of benzene and (BROWN), 1881, T., 210, 528.

action of the copper-zinc couple on (GLADSTONE and TRIBE), 1874, 406.

action of, on dilute alcohol in presence of ethylenic acetate (DEMOLE), 1875, 747, 1172.

action of dimethylaniline on (SCHOOP), 1881, A., 160.

**Ethane**, *s*-dibrom- (*ethylenic dibromide*), action of nitric acid on (VILLIERS), 1882, A., 815.  
 action of silver oxalates on (KARETNIKOFF), 1877, ii., 422.  
 action of water on (NIEDERIST), 1877, ii., 422; 1879, A., 700.  
 some reactions of (BEILSTEIN and WIEGAND), 1882, A., 1179.  
*as*-dibrom- (*ethylidenic bromide*) (TAWILDAROFF), 1874, 348; (STAEDEL and DENZEL), 1879, A., 214.  
*tribrom*- (*bromethylenic dibromide*; *vinyl tribromide*) (TAWILDAROFF), 1874, 348; (STAEDEL and DENZEL), 1879, A., 214.  
 action of silver cyanide on (ORLOWSKI), 1877, ii., 869.  
*s*-tetrabrom- (*acetylenic tetrabromide*) (BOURGOIN), 1875, 343; (ANSCHÜTZ), 1880, A., 98.  
 action of chlorine on (BOURGOIN), 1875, 439.  
 action of dimethylaniline on (SCHOOP), 1881, A., 160.  
*as*-tetrabrom- (*acetylidenic tetrabromide*; *dibromethylenic dibromide*) (TAWILDAROFF), 1874, 348; (BOURGOIN), 1875, 343, 625; 1877, ii., 443; 1878, A., 30; (ANSCHÜTZ), 1880, A., 98; (DENZEL), 1880, A., 228.  
*pentabrom*- (*bromacetylenic tetrabromide*) (BOURGOIN), 1875, 552, 625; (DENZEL), 1880, A., 228.  
 formation of, from mucobromic acid (LIMPRICHT), 1873, 625.  
*hexabrom*- (DENZEL), 1880, A., 228.  
 formation of, from mucobromic acid (LIMPRICHT), 1873, 625.  
*s*-bromiod- (*ethylenic bromiodide*), (LAGERMARK), 1874, 240; (SIMPSON), 1874, 564; (GAGARIN), 1874, 1075.  
*as*-bromiod- (*ethylidenic bromiodide*) (LAGERMARK), 1874, 240, 1151; (GAGARIN), 1874, 1075; (SIMPSON), 1880, A., 456.  
*dibromiod*- (*vinyl iododibromide*) (SIMPSON), 1874, 564.  
*bromonitr*- (TCHERNIAC), 1876, i., 901.  
*bromonitr*- and *dibromonitr*- (MEYER and WURSTER), 1873, 611.  
*bromodinitr*- and *dibromonitr*- (TEEMEER), 1876, i., 67; ii., 185.  
*dibromonitr*- (MEYER), 1875, 245.  
*dibromotetranitr*- (*tetranitroethylenic bromide*) (VILLIERS), 1882, A., 815.  
 chloro-derivatives, relation of their boiling points (STAEDEL), 1878, A., 652.

**Ethane**, chloro-derivatives, boiling points and molecular volumes of (HINRICHS), 1873, 1014.  
 chlor-. See *Ethylic chloride*.  
*s*-dichlor- (*ethylenic dichloride*) (SCHORLEMMER), 1881, T., 144.  
 physical properties of (THORPE), 1880, T., 182.  
 volume of mixtures of benzene and (BROWN), 1881, T., 209.  
 action of the copper-zinc couple on (GLADSTONE and TRIBE), 1874, 615.  
 action of nitric acid on (LAUTERBACH), 1879, A., 700.  
*as*-dichlor- (*ethylidenic dichloride*), physical properties of (THORPE), 1880, T., 183.  
 thermochemical data for (BERTHELOT and OGIER), 1881, A., 675.  
 action of the copper-zinc couple on (GLADSTONE and TRIBE), 1874, 615.  
 action of chlorine on (TAWILDAROFF), 1881, A., 398.  
 action of nitric acid on (LAUTERBACH), 1879, A., 700.  
 action of sodium sulphite on (BUNTE), 1874, 353.  
 preparation of *diiodethane* from (GUSTAVSON), 1871, 1075, 1153.  
*tri*- and *tetra*-chlor-, action of, on sodium ethoxide (GEUTHER and BROCKHOFF), 1873, 867.  
*pentachlor*-, preparation and physical properties of (THORPE), 1880, T., 192.  
 action of, on sodium ethoxide (GEUTHER and BROCKHOFF), 1873, 867.  
*hexachlor*- (STAEDEL), 1879, A., 212.  
 action of molecular silver on (GOLDSCHMIDT), 1881, A., 707.  
 conversion of, into bromide (GUSTAVSON), 1882, A., 375.  
 chlorobrom-, substitution derivatives of, nomenclature and boiling points of (DENZEL), 1879, A., 368.  
*s*-chlorobrom- (*ethylenic chlorobromide*) (LESCEUR), 1878, A., 718.  
 direct formation of (SIMPSON), 1880, A., 456.  
*as*-chlorobrom- (*ethylidenic chlorobromide*) (LESCEUR), 1878, A., 718; (REBOUL), 1879, A., 369.  
*as*-chlorobrom-, chlorodibrom- [b.p. 124° and 163°], chlorotribrom-chlorotetrabrom-, dichlorobrom- [b.p. 99°], dichlorodibrom- [b.p. 178°], and dichlorotribrom- [b.p. 215°] (DENZEL), 1879, A., 213.



- Ethane**, *tetrachlorodibrom-* (BOURGOIN), 1875, 1245; 1876, i., 58.  
*chlorotetrabrom-* (WALLACH and BISCHOFF), 1878, A., 653.  
*dichlorotetrabrom-* and *chloropentabrom-* (DENZEL), 1880, A., 228.  
*s-chloriod-* (*ethylenic chloriodide*), preparation and physical properties of (THORPE), 1880, T., 179.  
*as-chloriod-* (*ethylenic chloriodide*) (SIMPSON), 1880, A., 456.  
*chlorodinitr-* (LAUTERBACH), 1879, A., 700.  
*s-diiod-* (*ethylenic diiodide*) (ARONSTEIN and KRAMS), 1880, A., 541.  
*as-diiod-* (*ethylenic diiodide*) (GUSTAVSON), 1874, 1075, 1153.  
*nitr-* (MEYER and WURSTER), 1874, 146; (GEUTHER), 1875, 415; (MEYER), 1875, 632.  
preparation of (LAUTERBACH), 1878, A., 844; (KISSEL), 1882, A., 935.  
constitution of (GEUTHER), 1875, 445; (KISSEL), 1882, A., 375.  
action of various substances on (WERNER), 1877, i., 297.  
sodium derivatives of (MEYER and RILLIET; MEYER and CHOJNACKI), 1873, 261.  
*as-dinitr-* (TER MEER), 1875, 1182; 1876, i., 67; ii., 185.  
**s-Ethanedisulphonic acid** (MEYER and WURSTER), 1874, 146.  
action of phosphorus *pentachloride* on (KOENIGS), 1875, 140.  
**as-Ethanedisulphonic acid** (*ethylenedisulphuric acid*) and its salts (GUAR-ESCHI), 1879, A., 710.  
**Ethanesulphonic acid** (*ethylsulphonic acid*) (ZUCKSCHWERT), 1874, 674; (CLAËSSON), 1877, ii., 296; (PAULY), 1877, ii., 734.  
barium salt of (FRANKLAND and LAWRENCE), 1879, T., 246.  
products of the oxidation of, by nitric acid (ZUCKSCHWERT), 1875, 343.  
**Ethanesulphonic acid** (FRANKLAND and LAWRENCE), 1879, T., 133.  
heat of formation of (BERTHELOT), 1876, i., 872.  
action of chlorine on (SPRING and WINSSINGER), 1882, A., 939.  
amido-. See Taurine.  
β-chlor-, oxidation of ethylic chlorothioeyanate into (JAMES), 1879, T., 806.  
**Ethantetracarboxylic acid**, *dibrom-*, ethylic salt of (CONRAD), 1881, A., 577.  
**Ethanethiosulphonic acid** and its salts (SPRING), 1875, 129.  
**Ethanetricarboxylic acid** (ORLOWSKI), 1877, -ii., 883; 1878, A., 30; (CONRAD), 1879, A., 707; (BISCHOFF), 1881, A., 156.  
chlor- (BISCHOFF), 1881, A., 156.  
**Ethene chlorhydrate**. See Ethylic alcohol, chlor-.  
**Ethenylamidine** (*acetamidine*) (TAWILDAROFF), 1873, 59.  
**Ethenyltriamidobenzene** (HOBRECKER), 1873, 174.  
hydrochloride (SALKOWSKI), 1878, A., 140.  
**Ethenyl-o-amidophenol** (LADENBURG), 1877, i., 302.  
**Ethenylamidophenyl mercaptan** (v. HOFMANN), 1880, A., 389, 885.  
**Ethenyltriamidotoluene**. See Tolylene-ethenylidiamine.  
**Ethenylamidotolyl mercaptan** (HESS), 1881, A., 597.  
**Ethenylbicarbonic acid**. See Ethanetricarboxylic acid.  
**Ethenyldiphenyldiamine**. See s-Diphenylacetamidine.  
**Ethenyldi-o-tolyldiamine**. See Di-o-tolyacetamidine.  
**Ethenyltolylamidine**. See p-Tolylacetamidine.  
**Ethenyltricarboxylic acid**. See Ethanetricarboxylic acid.  
**Ethenylxylylenediamine**. See Xylyleneacetamidine.  
**Ether**. See Ethyl ether.  
**Ethereal nitrates** from milk-sugar (GÉ), 1882, A., 1042.  
explosive, estimation of nitrogen in (TSCHELZOFF), 1880, A., 355.  
oils. See Oils, vegetable.  
salts, influence of isomerism of alcohols on the formation of (MENSCHUTKIN), 1881, A., 36.  
action of haloid acids on (SAPPER), 1882, A., 493.  
of carbonic acid (RÖSE), 1881, A., 251.  
of nitric and nitrous acids, ultra-violetabsorption spectra of (SORET and RILLIET), 1880, A., 202.  
of phenols, simple method for the preparation of (RASIŃSKI), 1882, A., 1288.  
of phenyl and their derivatives (SCHIAFARELLI), 1881, A., 602.  
sulphates of polyhydric alcohols and carbohydrates (CLAËSSON), 1879, A., 1033; 1883, A., 28.  
**Etheric acid** (*lampic acid*) (LEGLER), 1881, A., 576.

- Etherification** (VAN'T HOFF), 1877, ii., 418; (THOMSEN), 1877, ii., 725; (MENSCHUTKIN), 1877, ii., 865; 1882, A., 384, 817; (DEMOLE), 1878, A., 20; (BERTHELOT), 1879, A., 866.
- limits of (BERTHELOT), 1878, A., 127.
- thermic researches on (BERTHELOT), 1876, i., 674; 1879, A., 870; (LUGININ), 1879, A., 871.
- function of auxiliary acids in (BERTHELOT), 1878, A., 765.
- influence of metallic chlorides on (BERTHELOT), 1879, A., 448.
- of acids (MENSCHUTKIN), 1880, A., 375; 1881, A., 39, 883, 1117; 1882, A., 383, 485, 595.
- of alcohols (MENSCHUTKIN), 1878, A., 127; 1879, A., 36, 214, 215; 1881, A., 36, 146, 883, 1117; 1882, A., 485, 817.
- of ethylenic glycol (LORIN), 1875, 51.
- of glyceryl dibromhydrin (*s-dibromoisopropyllic alcohol*) (MENSCHUTKIN), 1882, A., 817.
- of hydriodic and hydrochloric acids (VILLIERS), 1880, A., 711.
- of hydrobromic acid (VILLIERS), 1881, A., 32.
- of hydroxybenzoic acids (MENSCHUTKIN), 1882, A., 486.
- of lactic acid (MENSCHUTKIN), 1882, A., 486.
- of methylsuccinic acid (MENSCHUTKIN), 1882, A., 383.
- of phenols (MENSCHUTKIN), 1878, A., 574; 1879, A., 215; 1881, A., 144, 146; (MERZ and WEITH), 1881, A., 264.
- Etherpyrophosphoric dinaphtholsulphonic acid.** See Pyrophosphonodinaphtholdisulphonic acid.
- Ethers**, history of (BERTHELOT), 1881, A., 8.
- combinations of titanium chloride with (DEMARÇAY), 1873, 1015.
- aromatic (v. NIEDERHÄUSERN), 1882, A., 1211.
- chlorinated, synthesis of alcohols by means of (LIEBEN), 1876, i., 59.
- compound, direct conversion of nitriles into (BECKURTS and OTTO), 1877, ii., 874.
- homologous, vapour-densities of (SCHUMANN), 1881, A., 782.
- mixed, action of hydriodic acid on, at low temperatures (DA SILVA), 1876, i., 60.
- action of iodine and aluminium on (GLADSTONE and TRIBE), 1876, ii., 357.
- Ethers**, mixed, action of sulphuric acid on (ELTEKOFF), 1878, A., 129.
- Ethinediphtalyl.** See Diphtalylethane.
- Ethine-*o*-phenylene diketone.** See Diphtalylethane.
- Ethionic acid** and its barium salt (CLAËSSON), 1879, A., 777.
- Ethoxide**, aluminium (GLADSTONE and TRIBE), 1876, i., 160; 1881, T., 1, 3.
- aluminium iodide (GLADSTONE and TRIBE), 1881, T., 1.
- barium (BERTHELOT), 1874, 246.
- sodium, constitution of (LAUBENHEIMER), 1873, 44.
- action of heat on (MERZ and WEITH), 1874, 318.
- behaviour of, when heated with acetamide (HARTLEY), 1873, 991.
- action of bromine on (SELL and SALZMANN), 1874, 784; (BARTH), 1877, i., 290.
- action of, on trichloroacetic acid (KLIEN), 1877, i., 290.
- action of chlorides on (GEUTHER and BROCKHOFF), 1873, 866.
- action of, on acetylated codeine and morphine (BECKETT and WRIGHT), 1875, 323.
- action of, on phosphorus pentachloride (FRANCHIMONT), 1874, 565.
- action of silicon fluoride on (KLIPPERT), 1875, 1171.
- Ethoxyacetonitrile** (*ethylglycollic acid, nitrile of*) (HENRY), 1873, 879; (NORTON and TCHERNIAC), 1878, A., 971.
- 2-Ethoxyanthraquinone**, 1:3-dinitrile (SIMON), 1882, A., 863.
- o*-Ethoxybenzaldehyde**, acids from (PERKIN), 1881, T., 409.
- Ethoxybenzenedisulphonic acid**, its chloride and amide, and its salts (ZANDER), 1880, A., 124.
- m*-Ethoxybenzoic acid** (FITTICA), 1878, A., 981.
- o*-Ethoxybenzyl alcohol** (*ethylsalicylic alcohol*) (BÖTSCH), 1882, A., 174.
- Ethoxybutyric acid** and its derivatives (DUVILLIER), 1878, A., 489; (PINNER), 1880, A., 99.
- Ethoxyisobutyric acid** (HELLAND WALDBAUER), 1877, ii., 313; (TESTA), 1880, A., 871.
- Ethoxycaffeine** (FISCHER), 1881, A., 614.
- Ethoxycarbimidamidobenzoic acid**, formula of (GRIESS), 1879, A., 466.
- decomposition of, by nitrous acid (GRIESS), 1876, ii., 413.

- "**Ethoxycarbimidamido-dinitrophenol**" (GRIESS), 1882, A., 969.
- 3-**Ethoxycuminic acid**, and its salts (LIFFMANN and LANGE), 1881, A., 276.
- "**Ethoxycyanamidobenzoyl**" (GRIESS), 1879, A., 321, 466.
- Ethoxyethanetricarboxylic acid** (BISCHOFF and EMMERT), 1882, A., 1191.
- Ethoxyethylene**, dichlor-. See Vinyl ethyl oxide, *dichloro*-.  
**Ethoxyhydroxysalicylaldehyde**. See 2-Hydroxy-5-ethoxybenzaldehyde.
- Ethoxymethenylamidophenyl mercaptan** (V. HOFMANN), 1880, A., 388.
- Ethoxymethylpropylbenzene** (*thymol ethyl ether*) and 2:6-dinitro- (LADENBURG and ENGELBRECHT), 1878, A., 60.  
 oxidation of (PATERNÒ and CANZONERI), 1880, A., 247.
- Ethoxynaphthalenes**,  $\alpha$ - and  $\beta$ - ( $\alpha$ - and  $\beta$ -*naphthyl ethyl ether*), and their derivatives (KOELLE), 1881, A., 177; (LIEBERMANN and HAGEN), 1882, A., 1212.  
 nitration of (STAEDEL), 1881, A., 724.
- Ethoxynitrophenol**, brom-*o*- and -*p*- (WEDDIGE), 1880, A., 316.
- p*-**Ethoxyphenylacetic acid** (SALKOWSKI), 1880, A., 252.
- Ethoxyphenylacrylic acid**,  $\alpha\alpha$ - and  $\alpha\beta$ - (PERKIN), 1881, T., 412.
- $\alpha\alpha$ -**Ethoxyphenylbromacrylic acid** (PERKIN), 1881, T., 428.
- $\alpha\beta$ -**Ethoxyphenylcrotonic acid** (PERKIN), 1881, T., 438.
- $\alpha$ -**Ethoxy- $\alpha$ -phenylpropionic acid** (RÜGHEIMER), 1881, A., 600.
- Ethoxyphenylthiocarbimide**. See Ethoxymethenylamidophenyl mercaptan.
- Ethoxyterephthalic acid** (PATERNÒ and CANZONERI), 1880, A., 247.
- Ethoxytoluenes**, *o*- and *p*- (*o*- and *p*-*tolyl ethyl ether*), and their nitration (STAEDEL), 1881, A., 723.
- p*-**Ethoxytoluene**, 3:5-diamido-, and 3-nitr- (KAYSER), 1882, A., 1203.
- 3-**Ethoxy-*p*-toluic acid**, and nitr- (PATERNÒ and CANZONERI), 1880, A., 247.
- Ethyl**, selenium compounds of (V. PIEVERLING), 1877, i., 290; 1878, A., 129.
- Ethyl allyl oxide** (*allyl ethyl ether*), action of hypochlorous acid on (HENRY), 1875, 346.
- Ethyl amyl ketone** (*ethylamylpinacolin*) (WISCHNEGRADSKY), 1875, 878; (LAWRINOWITSCH), 1877, ii., 306; (HARTWIG), 1881, A., 794.
- Ethyl tert.-amyl oxide** (WISCHNEGRADSKY), 1878, A., 394.
- Ethyl tert.-butyl ketone** (WISCHNEGRADSKY), 1875, 878.
- Ethyl ether** (*diethyl oxide*), preparation of (SÜSSENGUTH), 1874, 610.  
 new mode of formation of (GREENE), 1878, A., 656.  
 products from the manufacture of (HARTWIG), 1881, A., 794.  
 freezing-point of (FRANCHIMONT), 1877, ii., 425.  
 illuminating power of (KNÜBLATZ), 1881, A., 329.  
 and other organic bodies, luminous incomplete combustion of (PERKIN), 1882, T., 363.  
 solubility of, in aqueous hydrochloric acid (DRAPER), 1877, ii., 178.  
 exsiccator for (ANON.), 1879, A., 875.  
 action of, on cupric oxide (GUEROUT), 1874, 1152.  
 action of, on iodides (FERRIERE), 1873, 365.  
 action of iodine and aluminium on (GLADSTONE and TRIBE), 1876, ii., 357.  
 action of hydriodic acid on, at low temperatures (DA SILVA), 1876, i., 60.  
 behaviour of, in contact with various substances (LIEBEN), 1873, 263.  
 decomposition of, by zinc-dust (JAHN), 1880, A., 794; 1881, A., 141.  
 oxidation of, by ozone (WRIGHT), 1874, 975; (KINGZETT), 1880, T., 801.  
 compounds of, with anhydrous metallic chlorides (BEDSON), 1876, i., 309.  
 compound of, with antimony *penta*-chloride (WILLIAMS), 1876, ii., 463.  
 compound of, with phosphorus *penta*-chloride (LIEBERMANN and LANDSHOFF), 1881, A., 33.  
 compound of, with titanium *tetra*-chloride (BERTRAND), 1881, A., 240.  
 compounds of, with vanadium oxy-chloride and titanium *tetrachloride* (BEDSON), 1876, i., 309.  
 hydrate of (TANRET), 1878, A., 565.  
 filtering syphon for the separation of (WARDEN), 1882, A., 771.  
 detection of alcohol and water in (BÖTTGER), 1873, 532.  
 detection of water in (MANN), 1880, A., 679.  
 estimation of alcohol in (ALLEN), 1877, ii., 930.
- Ethyl ether, brom-**. See Diethylic oxide, bromo-.
- chlor-**. See Diethylic oxide, chloro-

- Ethyl *n*-heptyl oxide** (CROSS), 1877, ii., 127.
- Ethyl hexyl oxide**, conversion of, into ethylic iodide and hexylic iodide by hydriodic acid (LIEBEN), 1876, i., 60.
- Ethyl mercaptan** and its metallic salts (CLAËSSON), 1876, ii., 504; 1877, i., 585; ii., 111, 294.  
conversion of aldehyde into (BÖTTINGER), 1879, A., 451.  
action of diazo-compounds on (SCHMITT and MITTENZWEY), 1879, A., 304.  
action of phosphorus *pentachloride* on (CLAËSSON), 1877, ii., 296.  
crystalline compound formed in water containing hydrogen sulphide and (BLAIKIE), 1882, A., 592.  
compound of, with antimonous chloride (CLAËSSON), 1877, ii., 296.  
mercury and lead salts of, behaviour of, at high temperatures (OTTO), 1880, A., 796.  
silicon salt of (FRIEDEL and LADENBURG), 1873, 53.  
sodium salt of, action of, on iodo-methane, methylenic iodide and chloroform (CLAËSSON), 1877, ii., 293.
- Ethyl nitrogen chloride**. See Ethylamine, dichlor-.
- Ethyl *n*-octyl oxide** (MÖSLINGER), 1876, ii., 393.
- Ethyl peroxide** (BERTHELOT), 1881, A., 709.
- Ethyl propyl ketone**, hydrogenation of (OCHSNER DE CONINCK), 1876, ii., 67.
- Ethyl isopropyl ketone** (BUTLEROFF), 1878, A., 125.
- Ethyl pyruvyl ether**. See Ethylacetylcarbinol.
- Ethyl disulphoxide** (*ethylic ethanthio-sulphonate*), synthesis of (OTTO), 1882, A., 831.  
decomposition of, by potash (PAULY and OTTO), 1879, A., 219.
- Ethyl orthoacetaldehyde** (*ethylidene ethylate*) (RENARD), 1880, A., 24.
- Ethylacetamide**. See Acetethylamide.
- Ethylacetone**. See Methyl propyl ketone.  
nitroso-. See Methyl propyl ketone, oximes of.
- $\alpha$ -Ethyl- $\beta$ -acetopropionic acid**. See  $\beta$ -Acetyl-*isovaleric* acid.
- Ethylacetylcarbinol** (*ethyl pyruvyl ether*) (HENRY), 1881, A., 1121.
- Ethylalizarin** (SCHUNCK), 1873, 900.
- Ethylallylamine** (GAL), 1873, 1025; (RINNE), 1874, 50.
- m*-Ethylamidobenzoic acid**, nitr- (HÜBNER), 1878, A., 148.
- $\alpha$ -Ethylamidobutyric acid** (DUVILLIER), 1881, A., 87.
- Ethyl-*o*-amidocinnamic acid**, action of sodium nitrite on (FISCHER), 1881, A., 599.
- Ethylamidoethylic formate**. See Ethylic ethylcarbamate.
- Ethyl- $\alpha$ -amidohexoic acid** (DUVILLIER), 1880, A., 543.
- o*-Ethylamido phenetol** and -phenol and their salts (FÖRSTER), 1880, A., 464.
- o*-Ethylamidophenol nitronitrosamine** (FÖRSTER), 1880, A., 464.
- Ethylamidoquinol hydrochloride** (WESELSKY and BENEDIKT), 1881, A., 1139.
- Ethyl-*o*-amidotoluene**. See Toly-ethane, *o*-amido-.
- $\alpha$ -Ethylamidoisovaleric acid** (DUVILLIER), 1881, A., 713.
- Ethylamine** (NORTON and TCHERNIAC), 1878, A., 972; (KÖHLER), 1879, A., 219; 1880, A., 159.  
formation of (KÖHLER), 1879, A., 219; 1880, A., 159.  
thermochemistry of (BERTHELOT), 1880, A., 787.  
action of mercuric chloride on (KÖHLER), 1880, A., 159.
- Ethylamine camphorate**, action of phosphorus *pentachloride* on (WALLACH and KAMENSKI), 1880, A., 548.  
hydrochloride, decomposition of, by heat (FILETI and PICCINI), 1880, A., 30.  
malate, phthalimide and pimelate, action of phosphorus *pentachloride* on (CANNIZZARO and CARNELUTTI; WALLACH and KAMENSKI), 1881, A., 285.  
platinocyanide (SCHOLZ), 1881, A., 707.  
pyromucate, action of phosphorus *pentachloride* on (WALLACH), 1881, A., 715.
- Ethylamine, dichlor-** (*ethyldichloramine*) (TCHERNIAC), 1876, i., 576; (NORTON and TCHERNIAC), 1878, A., 972; (KÖHLER), 1880, A., 233.  
boiling-point of (KÖHLER), 1879, A., 781.  
spontaneous decomposition of (TCHERNIAC), 1880, A., 311.  
decomposition products of (KÖHLER), 1880, A., 233.



- Ethylamines**, production and separation of (DUVILLIER and BUISINE), 1879, A., 305; 1881, A., 1027.  
 action of ethylic chloride on (DUVILLIER and BUISINE), 1880, A., 794.
- Ethylamyl**. See Heptane.
- Ethylisoamylaniline**, methohydroxide of, action of heat on (V. Hofmann), 1881, A., 571.
- Ethylisoamylsulphone** (BECKMANN), 1879, A., 38.
- Ethylaniline**, new source of (SPILLER), 1873, 759.  
 action of nitrous acid on (GRIESS), 1874, 587.  
 5:2-chloronitr- (LAUBENHEIMER), 1878, A., 976.  
 nitroso- (GRIESS), 1874, 587.
- Ethylanilinesulphonic acid** (SMYTH), 1875, 164.
- Ethylanthracene** (LIEBERMANN and TOBIAS), 1881, A., 737; 1882, A., 862.
- Ethylanthranol** (LIEBERMANN and HOERMANN), 1879, A., 654; 1882, A., 859.
- Ethylanthrone**, nitr- (LIEBERMANN and LANDSHOFF), 1881, A., 607.
- Ethylarsenious dichloride** and **ethylarsinic acid** (LA COSTE), 1881, A., 905.
- Ethylazaurolic acid** (*nitrosoazethane*) (MEYER and CONSTAN), 1881, A., 895.
- Ethylbenzene** (*phenylethane*) (BALSOHN), 1879, A., 785; (RENNIE), 1882, T., 33.  
 synthesis of (BALSOHN), 1880, A., 463; (GOLDSCHMIDT), 1882, A., 952.  
 action of bromine on boiling (RADZISZEWSKI), 1873, 1028.  
 action of chromyl dichloride on (ETARD), 1881, A., 582.  
 limited oxidation of (FRIEDEL and BALSOHN), 1880, A., 469.
- Ethylbenzene**, *p*-amido- (BENZ), 1882, A., 1284.  
 formation of, from ethylaniline (V. Hofmann), 1874, 807.  
*ω*-amido-. See Phenylethylamine.  
*α*-brom- (V. BANDROWSKI), 1875, 62.  
*ω*-brom-, constitution of (RADZISZEWSKI), 1874, 469.  
*pentabrom*- (GUSTAVSON), 1878, A., 973.  
*dichloro-p*-nitr- (DREWSSEN), 1882, A., 847.
- Ethylbenzenesulphonic acid** (CHRUSTSCHOFF), 1875, 162.
- Ethylbenzhydroxamic acid** (EISELER), 1875, 766; (GÜRKE), 1881, A., 584.
- Ethylbenzimidamide**. See Benzenylethylamine.
- o*-**Ethylbenzoic acid** (GABRIEL and MICHAEL), 1878, A., 427.
- p*-**Ethylbenzoic acid**, and nitr- and its salts (ASCHENBRANDT), 1879, A., 920.
- Ethylbenzophenone**. See Phenyl *p*-ethylphenyl ketone.
- Ethyltetrabromofluorescein** (*erythrin*) (V. BAAYER), 1877, i., 202.
- Ethylbromotarconinic acid** and its salts (V. GERICHTEN), 1882, A., 871.
- Ethylbutane**. See *n*-Hexane.
- Ethylisobutylcarbinol** (*sec.-heptylic alcohol*), etherification of (MENSCHUTKIN), 1882, A., 817.
- Ethylcamphene** (SPITZER), 1879, A., 168.
- Ethylcarbamide** and its derivatives (LEUCKART), 1880, A., 383.
- Ethylcarbazole** and its compound with picric acid (GRAEBE and V. ADLERSKRON), 1880, A., 660.
- Ethylcarbazoline**, and its iodide (GRAEBE and V. ADLERSKRON), 1880, A., 660.
- 1-Ethyl- $\alpha$ -carbopyrrolic acid** (BELL), 1879, A., 525.
- Ethylcarbostyryl**, and its derivatives (FRIEDLÄNDER and OSTERMAIER), 1882, A., 201, 732; (FRIEDLÄNDER and WEINBERG), 1882, A., 1209.  
 action of reducing agents on (FRIEDLÄNDER and WEINBERG), 1882, A., 1209.
- Ethylcarbylamine** (NORTON and TCHERNIAC), 1878, A., 972.  
*di*brom- (TCHERNIAC), 1878, A., 132.
- Ethylchloramine**. See Ethylamine, *dichlor*-.
- Ethylchrysin** (PICCARD), 1877, ii., 342.
- Ethylcinchonidine** and its derivatives (CLAUS), 1879, A., 169; (CLAUS and DANNENBAUM), 1881, A., 183.  
 salts of, rotatory power of (HOWARD), 1873, 1181.  
 hydrobromide, oxidation of (CLAUS and WELLER), 1882, A., 228.
- Ethylcinchonine** and its ethiodide (CLAUS and KEMPERDICK), 1881, A., 289.  
 salts of, rotatory power of (HOWARD), 1873, 1182.
- Ethylcitric acid** (KAEMMERER), 1875, 1178; (ANDREONI), 1880, A., 877.
- Ethylcærulignone** (V. Hofmann), 1878, A., 869; (WESELSKY and BENEDIKT), 1882, A., 54.

- Ethyl-o-coumaric acids.** See Ethoxy-phenylacrylic acids.
- Ethylcoumarin** (*butyric coumarin*), crystalline forms of, and products from (PERKIN), 1881, T., 435.
- Ethylcresols**,  $\alpha$ - and  $\beta$ -chlor- (WROBLEWSKI), 1874, 55.
- o*-Ethylcresolsulphonic acid** (HAY-DUCK), 1874, 1095.
- $\alpha$ -Ethylcrotonic acid.** See Hexenoic acid.
- mono-* and *di-brom-* (FITTIG), 1880, A., 375.
- chlor-* (DEMARÇAY), 1877, ii., 591.
- Ethyl-*o*- and -*p*-cumenols** (SPICA), 1880, A., 167.
- "Ethylcymene"** (LANDOLPH), 1878, A., 721.
- Ethyldeoxybenzoin** (SÖLLSCHER), 1882, A., 1292.
- Ethyldiacetic acid.** See Ethylic acetate.
- Ethyldiacetonamine** (EPPINGER), 1880, A., 868.
- Ethyldiallylcarbinol** (*cinninyl alcohol*) (SMIRENSKY), 1882, A., 488.
- Ethyldicarbopyrrolic acid** (BELL), 1879, A., 525.
- Ethyldihydroanthracene** (LIEBERMANN), 1881, A., 100; (LIEBERMANN and LANDSHOFF), 1881, A., 609; 1882, A., 861.
- action of nitric acid on (LIEBERMANN and LANDSHOFF), 1881, A., 606.
- Ethyldihydroanthranol** (LIEBERMANN and TOBIAS), 1881, A., 737.
- Ethyldihydrocarbostyryl** (V. BAeyer and JACKSON), 1880, A., 406; (FRIEDLÄNDER and OSTERMAIER), 1882, A., 733.
- Ethyldiphenylethylene.** See Ethylstilbene.
- Ethylene** and its compounds, preparation of (ERLENMEYER and BUNTE), 1873, 1118; (ERLENMEYER), 1878, A., 845.
- constitution of (FRANKLAND and DOBBIN), 1878, T., 545.
- decomposition of, by the silent electric discharge (P. and A. THENARD), 1873, 1093.
- affinity of carbon and hydrogen in (THOMSEN), 1873, 127, 838.
- illuminating power of (KNUBLAUCH), 1881, A., 329.
- liquid, use of, for producing low temperatures (CAILLETET), 1882, A., 914.
- action of diffused daylight on a mixture of chlorine peroxide and (FÜRST), 1881, A., 399.
- Ethylene**, action of heat on a mixture of diphenyl and (BARBIER), 1874, 1092.
- action of, on benzene, in presence of aluminium chloride (BALSOHN), 1879, A., 785.
- action of chlorine monoxide on (MULDER and BREMER), 1879, A., 303.
- action of hydrogen on, in contact with platinum-black (DE WILDE), 1874, 882.
- action of hypochlorous acid on (v. PERAL and FÜRST), 1879, A., 446.
- action of nitric acid on (HAITINGER), 1881, A., 1116.
- action of oxidising agents on (O. and F. ZEIDLER), 1879, A., 907.
- solution of, in sulphuric acid (BUTLEROFF and GORJAINOFF), 1873, 747.
- combination of, with boron fluoride (LANDOLPH), 1878, A., 483, 774; 1879, A., 915; (COUNCLER), 1880, A., 230.
- derivatives, boiling points of (SABANEEFF), 1881, A., 399.
- estimation of, in coal-gas (KNUBLAUCH), 1881, A., 850.
- Ethylene**, brom-. See Vinyl bromide.
- s-dibrom-* (*acetylenic dibromide*) (PLIMPTON), 1882, T., 391.
- constitution of (DEMOLE), 1880, A., 158.
- action of tertiary amines on (PLIMPTON), 1881, T., 536.
- action of oxygen gas on (DEMOLE), 1881, A., 142.
- experiments and theory on the change of, by means of oxygen into bromoacetic bromide (DEMOLE), 1878, A., 847.
- as-dibrom-* (*acetylenic dibromide*) (DEMOLE), 1878, A., 401.
- ketone from (DEMOLE), 1879, A., 220.
- tribrom-* [m.p. 174°] (PLIMPTON), 1882, T., 391.
- tribrom-* [m.p. 164°] (DEMOLE), 1878, A., 401.
- action of oxygen on (DEMOLE), 1881, A., 143.
- s-bromiod-* (*acetylenic bromiodide*) (PLIMPTON), 1882, T., 392.
- dibromonitr-* (MERZ and ZETTER), 1880, A., 114.
- trichlor-*, action of sodium on (BRUNNER and BRANDENBURG), 1878, A., 211.
- tetrachlor-*, preparation of (BOURCOIN), 1875, 746.

- Ethylene**, *tetrachlor*-, action of oxygen on the oxy-derivatives of (HENRY), 1880, A., 231.  
 conversion of, into bromide (GUSTAVSON), 1882, A., 375.  
*s*-chlorobrom- [b.p. 82°] (*acetylenic chlorobromide*) (PLIMPTON), 1882, T., 393.  
*as*-chlorobrom- [b.p. 62°], chlorodibrom- [b.p. 142°], *dichlorobrom*- [b.p. 116°], and *dichlorodibrom*- (DENZEL), 1879, A., 213.  
 chlorobromin- (DENZEL), 1880, A., 228.  
*s*-chloriod- (*acetylenic chloriodide*) and *s*-diiod- (*acetylenic diiodide*) (PLIMPTON), 1882, T., 391.  
**Ethylene chlorhydrin**. See *Ethylic alcohol*, chlor-.  
*o*-**Ethylenebenzylcarbonic acid**. See *Diphenylbutanedicarboxylic acid*.  
**Ethylenediamine**, preparation and properties of and its hydroxide (KRAUT, RHOUSSOPOULOS and MEYER), 1882, A., 939.  
**Ethylenedimorphine** (*dicodethylene*) and its hydrochloride (GRIMAU), 1881, A., 1045.  
**Ethylenedisalicylic acid** (WEDDIGE), 1880, A., 317.  
**Ethylene-eugenol** (CAHOURS), 1877, i., 462; ii., 478.  
**Ethylenelactic acid**. See *Hydracrylic acid*.  
**Ethylene**-*di*-*o*- and -*p*-nitrophenol. See *Diphenoxyethane*, *dinitro*-.  
*o*-**Ethyleneoxytoluene** (*o*-tolyl *ethylene ether*) (STAEDEL), 1881, A., 723.  
**Ethylenepicric acid**, iod- (ANDREWS), 1880, A., 619.  
**Ethyleneprotocatechuic acid** (FITTING and MACALPINE), 1873, 1144.  
**Ethylenepyrogallol** and its derivatives (MAGATTI), 1880, A., 250.  
**Ethylenetetrethyldiamine** (LADENBURG), 1882, A., 1194.  
**Ethylenic alcohol**. See *Ethylenic glycol*.  
 borate (COUNCLER), 1878, A., 774.  
 dibromide. See *Ethane*, *s*-dibrom-  
 brom-. See *Ethane*, *tribrom*-.  
 dibrom-. See *Ethane*, *as*-*tetrabrom*-.  
 iod- (SIMPSON), 1874, 564.  
 tribromide, hydrobromide of. See *Ethane*, *as*-*tetrabrom*-.  
 bromiodide. See *Ethane*, *s*-bromiod-  
 chloride. See *Ethane*, *s*-*dichlor*-.  
 chlorobromide. See *Ethane*, *s*-chloro-  
 brom-.  
 chloriodide. See *Ethane*, *s*-chloriod-  
 cyanide. See *Succinonitrile*.  
**Ethylenic di**-*o*- and -*p*-tolylimido-*mono*- and -*di*-thiocarbamates (WILL and BIELSCHOWSKI), 1882, A., 1091.  
**Ethylenic glycol**, preparation of (DEMOLE), 1874, 783; 1875, 343; 1876, ii., 284; (ZELLER), 1875, 442; (ZELLER and HÜFNER), 1875, 442, 1171; (LIETZENMAYER), 1876, ii., 64; 1877, i., 293; (BÖRNSTEIN), 1876, ii., 396; (GROSHEINTZ), 1877, ii., 875; (ERLENMEYER), 1878, A., 845; (STEMPNIEWSKY), 1878, A., 850.  
 electrolysis of (RENARD), 1880, A., 26.  
 heat of combustion of (LUGININ), 1880, A., 604.  
 etherification of (LORIN), 1875, 51.  
 action of aluminium iodide on (GLADSTONE and TRIBE), 1881, T., 10.  
 action of hydrochloric acid on (SCHORLEMMER), 1881, T., 143.  
 action of electrolytic oxygen on (RENARD), 1877, ii., 300.  
 action of sulphuryl chloride on (REINHARD), 1878, A., 222, 726.  
**Ethylenic diiodide**. See *Ethane*, *s*-diiod-.  
**Ethylenic oxide**, thermal constants of (BERTHELOT), 1881, A., 967.  
 thermochemistry of the action of acids on (BERTHELOT), 1881, A., 887.  
 substitution derivatives of (DEMOLE), 1876, i., 692.  
 polymeride of (WURTZ), 1877, i., 291; 1878, A., 719.  
**Ethylenic phenylimidophenylthiocarbamate**. See *Diphenylethylene-ψ*-thiocarbamide.  
 phenyldithiocarbamate (WILL), 1882, A., 723.  
 platinosochlorides of ammonium and potassium, and of ethylamine, aniline, pyridine, and lntidine, crystalline forms of (V. LANG), 1873, 471.  
 selenocyanide (PROSKAUER), 1875, 144.  
 disulphoxide (BECKMANN), 1879, A., 39.  
*o*- and -*p*-tolyl-*mono*- and -*di*-thiocarbamates (WILL and BIELSCHOWSKI), 1882, A., 1091.  
**Ethyleugenol**, its oxidation, and *mono*- and *tri*-brom- (WASSERMANN), 1876, i., 706.  
**Ethylflavaniline**, and its salts (FISCHER and RUDOLPH), 1882, A., 1067.  
**Ethylglycolamide**, formation of (NORTON and TCHERNIAC), 1878, A., 972.

- Ethylglycollic acid**, nitrile of (*ethoxy-acetonitrile*) (HENRY), 1873, 879; (NORTON and TCHERNIAK), 1878, A., 971.  
*trichlor-*, and its salts (V. GARZAROLLI-THURNLACKH), 1882, A., 295.
- Ethylglyoxaline** (*oxalpropylene*) and its salts (WYSS), 1878, A., 24; (WALLACH and SCHULZE), 1881, A., 572.  
*chlor-* (WALLACH and SCHULZE), 1880, A., 547.
- Ethylguaiacol**. See *Methylethylpyrocatechol*.
- Ethylhydrazine**, preparation of (FISCHER), 1876, i., 911.
- $\alpha$ -Ethyl- $\beta$ -hydroxybutyric acid** (WALDSCHMIDT), 1878, A., 136.
- Ethylhydroxylamine** and its salts, and the action of benzoic chloride on (GÜRKE), 1881, A., 571.
- Ethylic acetate**, conversion of alcohol into, by the (supposed) agency of cryptogamic life (RIMMINGTON), 1875, 284.  
 preparation of (MARKOWNIKOFF), 1874, 144; (PABST), 1880, A., 541; (ANON.), 1882, A., 296.  
 heat of formation of (BERTHELOT), 1879, A., 870.  
 distillation of mixtures of carbon disulphide and (BROWN), 1881, T., 530.  
 decomposition of, by heat (OPPENHEIM and PRECHT), 1876, ii., 63.  
 action of benzylic chloride on (PERKIN and HODGKINSON), 1880, T., 721.  
 action of bromine on (STEINER), 1874, 886; (URECH), 1881, A., 248.  
 action of oxalic acid on (KAEMMERER), 1875, 1171.  
 decomposition of, by zinc-dust (JAHN), 1881, A., 142.  
 conversion of, into butyric acid (LJUBAVIN), 1881, A., 249.
- Ethylic acetate**, *di*brom-, and *tri*chlor- (KESSEL), 1878, A., 133; 1879, A., 137.  
*trichlor-* (V. GARZAROLLI-THURNLACKH), 1882, A., 295.  
*tetrachlor-*, formation of, from chloral (MEYER and DULK), 1874, 460.
- Ethyl orthacetate**, silicon derivative of (LADENBURG), 1874, 40.
- Ethylic acetoacetate** (*ethyldiacetic acid*) and its derivatives (MIXTER), 1874, 784; (DUISBERG), 1882, A., 1192.  
 formation of (OPPENHEIM and PRECHT), 1876, ii., 69.  
 action of ammonia on (PRECHT), 1878, A., 970.
- Ethylic acetonacetate** (*ethyldiacetic acid*), action of aniline on (OPPENHEIM and PRECHT), 1876, ii., 505.  
 action of chlorine on (WISLICENUS), 1876, i., 370.  
 action of anhydrous hydrocyanic acid on (MORRIS), 1880, T., 6.  
 action of fuming nitric acid on (PRÖPPER), 1882, A., 1193.  
 action of nitrous acid on (MEYER), 1878, A., 396.  
 action of nitrous acid and alkalis on (CERESOLE), 1882, A., 1052.  
 action of, on the phenols in presence of dehydrating agents (WITTENBERG), 1882, A., 1289.  
 action of potassium ferricyanide on the copper compounds of *o*-nitrophenylacetylene and (V. BAEYER and LANDSBERG), 1882, A., 972.  
 action of phosphorus *pentachloride* on (BURTON), 1882, A., 711.  
 action of sodium on (WISLICENUS), 1874, 883; 1876, i., 367.  
 action of sulphuryl chloride on (ALLIHN), 1878, A., 566.  
 action of zinc chloride on a mixture of aldehyde-ammonia and (HANTZSCH), 1881, A., 1028.  
 oxidation of (EMMERLING and OPPENHEIM), 1876, ii., 505.  
 condensation products from aldehyde-ammonia and (HANTZSCH), 1881, A., 1028.  
 synthesis by means of (WISLICENUS), 1874, 883; 1876, i., 367; 1877, ii., 432.  
 conversion of, into methylsuccinic acid (CONRAD), 1878, A., 137.  
 detection of, in urine (HILGER), 1879, A., 560.  
 derivatives of (WISLICENUS), 1874, 883; 1876, i., 367; (DEMARÇAY), 1877, ii., 594.  
 an improved mode of preparing (CONRAD and LIMPACH), 1878, A., 781.  
 decomposition of (WISLICENUS), 1878, A., 402.  
 halogen derivatives of (CONRAD), 1877, ii., 435.  
 metallic derivatives of (CONRAD), 1878, A., 26.
- Ethylic acetylbenzylsuccinate** (CONRAD), 1878, A., 733.
- acetylcarbamate** (*acetylurethane*), preparation of (KRETZSCHMAR and SALOMON), 1874, 790.  
 action of alcoholic potash on (KRETZSCHMAR), 1875, 563; 1877 i., 614.



**Ethylic acetylcomenate** (REIBSTEIN), 1882, A., 197.

$\alpha$ -acetyl- $\alpha$ - $\beta$ -dimethylsuccinate (HARDTMUTH), 1878, A., 782.

$\alpha$ -acetyl- $\alpha$ -ethylsuccinate (HUGGENBERG), 1876, i., 565; 1878, A., 782.

$\alpha$ -acetyl- $\beta$ -ethylsuccinate (CLOWES), 1876, i., 565.

preparation of, and products of the action of alkalis on (THORNE), 1881, T., 336.

acetylglutarate (WISLICENUS and LIMPACH), 1878, A., 783.

acetylmalonate (WISLICENUS), 1876, i., 368.

acetyloxamate (*acetyloxamethane*), preparation of (KRETZSCHMAR and SALOMON), 1874, 790.

action of alcoholic potash on (KRETZSCHMAR), 1875, 563; 1877, i., 614.

acetylphenyloxamate (KLINGER), 1877, i., 711.

acetylsuccinate, and its derivatives (WISLICENUS), 1876, i., 367; (CONRAD), 1878, A., 137.

preparation of (CONRAD and LIMPACH), 1878, A., 781.

acetyltetracarbonate. See Ethylic ethanetettracarboxylate.

$\alpha$ -acetylisovalerate, derivatives of (DEMARÇAY), 1876, ii., 506.

$\beta$ -acetyl- $\alpha$ -isovalerate (THORNE), 1881, T., 341.

"**Ethylic acid, dinitr.**" (ZUCKSCHWERDT), 1874, 677.

new method of preparing (FRANKLAND and GRAHAM), 1880, T., 570.

**Ethylic alcohol** (*spirits of wine*), presence of, in coal tar (WITT), 1879, A., 136.

normally present in milk as products of the functions of microzymes (BÉCHAMP), 1873, 763.

occurrence of, in the organism (RAJEWSKY), 1876, i., 405.

presence of, in animal tissues (BÉCHAMP), 1881, A., 928.

presence of, in animal tissues during life and after death (BÉCHAMP), 1880, A., 174.

presence of, in human urine (BÉCHAMP), 1873, 399.

presence of, in crude wood spirit (v. HEMILIAN), 1875, 1004.

demonstration of the presence of, in beer and wine (TOLLENS), 1877, i., 270.

presence of, in plants (GUTZEIT), 1875, 1247; 1880, A., 914.

**Ethylic alcohol** (*spirits of wine*) from acorns and earth puffs (DILL), 1882, A., 121.

from Barbary figs (BALLAND), 1877, i., 355.

from potatoes (ANON.), 1880, A., 833.

transformation of sugar into (BERTHELOT), 1879, A., 778.

reduction of nitric acid and oxidation of acetic acid, with production of, by the influence of certain microzymes (BÉCHAMP), 1876, ii., 540.

formation of, by yeast alone, in presence and absence of oxygen (BÉCHAMP), 1879, A., 663.

production of, from ethylene (GORDJAINOFF and BUTLEROFF), 1874, 138.

manufacture of (ANON.), 1882, A., 1247.

preparation of, from maize (ANON.), 1881, A., 330; (DE LEEUW), 1882, A., 348.

limit of separation of, from water by distillation (LE BEL), 1879, A., 703.

commercial, purification of (SMITH), 1875, 342; (BERLIEN), 1880, A., 931; (RICHE), 1882, A., 1013; (SALZER), 1882, A., 1335.

defuselation of, by wood charcoal (SCHULTZE), 1873, 308.

absorption-bands of (SCHÖNN), 1878, A., 963.

electrolysis of (BARTOLI and PASOGLI), 1882, A., 406.

freezing point of water and (RAOULT), 1880, A., 523.

cryohydrate of (GUTHRIE), 1876, i., 336.

distillation of mixtures of carbon disulphide and, and of water and (BROWN), 1881, T., 529.

etherification of (MENSCHUTKIN), 1881, A., 884.

effect of passing the mixed vapours of carbon disulphide and, over red hot copper (CARNELLEY), 1875, 523.

action of, on bacteria (GUNNING), 1879, A., 817.

action of bleaching powder on (SCHMITT and GOLDBERG), 1879, A., 910; (GOLDBERG), 1882, A., 28.

action of, on ethylic chlorosulphonate (BEHREND), 1877, ii., 290; (CLAËSSON), 1879, A., 776.

action of ethylenic bromide on dilute, in presence of ethylenic acetate (DEMOLE), 1875, 747, 1172.

action of hydrochloric acid on (GROVES), 1874, 639.

**Ethylie alcohol** (*spirits of wine*), action of, on hydrogen dioxide (FAIRLEY), 1877, i., 24.  
 action of, on methylic chlorosulphonate (BEHREND), 1877, ii., 290.  
 action of electrolytic oxygen on (RENARD), 1875, 440.  
 action of ozone on (BOILLOT), 1873, 861; (WRIGHT), 1874, 975.  
 action of potassium cyanate on (AMATO), 1874, 366.  
 action of iodated potassium iodide on (GUYARD), 1879, A., 595.  
 action of potassium permanganate on (MORAWSKI and STINGL), 1879, A., 205.  
 action of rhodium, iridium [and ruthenium on (SAINTE-CLAIRE DEVILLE and DEBRAY), 1874, 1076.  
 action of sulphuryl chloride on (BEHREND), 1877, ii., 288.  
 action of nascent thiocyanic acid on (BLANKENHORN), 1877, ii., 423; 1878, A., 215.  
 action of zinc chloride on (LE BEL and GREENE), 1879, A., 1029.  
 decomposition of, by zinc chloride at high temperatures (GREENE), 1878, A., 655.  
 and its homologues, decomposition of, by aluminium and its halogen compounds (GLADSTONE and TRIBE), 1876, i., 158.  
 oxidation of, by an ammoniacal solution of cupric oxide (LETELIER), 1880, A., 310.  
 alcohols accompanying (PIERRE), 1876, i., 364.  
 occurrence of grape sugar in (SALOMON), 1877, i., 705.  
 products from ernde (PIERRE and PUCHOT), 1879, A., 612.  
 conversion of, into ethylic acetate by the (supposed) agency of cryptogamic life (RIMMINGTON), 1875, 284.  
 compound of, with allylic cyanide (RINNE), 1873, 879.  
 compound of, with antimony pentachloride (WILLIAMS), 1876, ii., 463.  
 combinations of, with lithium and magnesium chlorides (SIMON), 1880, A., 310.  
 some properties of mixtures of, with methylic cyanide (VINCENT and DELACHANAL), 1880, A., 524.  
 metallic derivatives of. See Ethoxides.  
 influence on, on animal heat (BINZ), 1873, 518.

**Ethylie alcohol** (*spirits of wine*), influence of, on digestion (FLEISCHER), 1881, A., 752.  
 chemical test for (DAVY), 1877, i., 109.  
 chemico-legal detection of (KUIJPER), 1873, 92.  
 detection of alkaloids in (SELM), 1873, 1167.  
 detection of fusel oil in (BOUVIER), 1873, 532; (JORISSEN), 1882, A., 429; (MÄRCKER), 1882, A., 1145.  
 detection of, in ether (BÜTTGER), 1873, 532; (ALLEN), 1877, ii., 930.  
 detection of, in fusel oil (ULEX), 1873, 1164.  
 detection of, in mixtures, especially in presence of wood spirit (RICHE and BARDY), 1876, ii., 327.  
 detection of methylic alcohol in (CAZENUEVE and COTTON), 1881, A., 197.  
 detection of, in ethereal oils (ANON.), 1878, A., 684.  
 detection of, in volatile oils (BÜTTGER), 1873, 532.  
 detection of, in transparent soaps (JAY), 1881, A., 314.  
 detection of water in (MANN), 1880, A., 679.  
 formulæ for calculating the quantity of water added to (ASHBY), 1881, A., 1182.  
 detection and approximate estimation of minute quantities of (THRESH), 1879, A., 279.  
 estimation of (DUCLAUX), 1874, 1012; (MAUMENÉ), 1876, ii., 661; (MORRELL), 1878, A., 246; (WARTHA), 1881, A., 479.  
 estimation of, by the boiling point (SALLERON), 1877, i., 346.  
 estimation of fusel oil in (HAGER), 1882, A., 339.  
 estimation of, in aqueous liquids and wines and in presence of sugar (SALLERON), 1874, 817.  
 estimation of, in beer, by means of the ebullioscope (WAAGE), 1879, A., 1065.  
 estimation of, in commercial chloroform (OUDEMANS), 1873, 533, 1059.  
 estimation of, in methylic alcohol (RICHE and BARDY), 1875, 1292.  
**Ethylie alcohol**, brom- (*glycol bromhydric*) (DEMOLE), 1876, i., 692.  
 chlor- (*ethylene chlorhydric*; *glycol chlorhydric*), heat of formation of (BERTHELOT), 1881, A., 887.  
 etherification of (MENSCHUTKIN), 1882, A., 817.  
 action of bromine on (DEMOLE), 1876, ii., 283.

**Ethyl alcohol**, chlor-, action of oxides on (KASCHIRSKY), 1878, A., 21.

$\omega$ -chlor- (*ethylidene chlorhydrin*) (HENRY), 1873, 1117.

trichlor- (V. GARZAROLLI-THURN-LACKH), 1882, A., 295.

See also Spirits.

**Ethyl alcohol tables** for converting "overproof" and "underproof" into alcohol per cent. (COHNÉ; ALLEN), 1880, A., 773.

**Ethyl aldehyde**. See Acetaldehyde.

allophanate (BÄSSLER), 1878, A., 214; (WILM), 1878, A., 851; (LEUCKART), 1880, A., 384.

action of aldehyde-ammonia on (SCHIFF; LADENBURG), 1878, A., 669.

allylacetate and its derivatives (ZEIDLER), 1877, ii., 437.

allylacetate (WISLICENUS), 1876, i., 368.

sodium derivative of (WOLFF), 1878, A., 293.

allylmalonate (CONRAD and BISCHOFF), 1880, A., 628.

amidoacetate (KRAUT), 1876, i., 61; (DE FORCRAND), 1879, A., 621.

hydriodide of (KRAUT), 1876, i., 61; ii., 625.

*o*-amidocinnamate (FRIEDLÄNDER and WEINBERG), 1882, A., 1209.

amidomaleate and amidomaleamate (CLAUS and VOELLER), 1881, A., 254.

*o*-amidophenylcarbamate, and the action of potassium nitrate on (RUDOLPH), 1879, A., 921.

amidophthalate (MILLER), 1878, A., 983.

diamidosuccinate (CLAUS and HELPENSTEIN), 1881, A., 578.

amidoveratrate (MATSMOTO), 1878, A., 502.

isoamylcarbamate (CUSTER), 1879, A., 913.

isoamyl carbonat (RÖSE), 1881, A., 253.

anilidoacetate (MEYER), 1876, i., 372.

anilidodichloracetate (KLINGER), 1877, i., 711.

anisbenzhydroxamate. See Benzanisylethylhydroxylamine.

benzenesulphonate (SCHILLER and OTTO), 1877, i., 463.

benzenethiosulphonate (*phenylethyl disulphoxide*) (OTTO), 1880, A., 812.

synthesis of (OTTO), 1882, A., 832.

benzoate, vapour-density of (TROOST), 1879, A., 1025.

**Ethyl benzoate**, distillation of (NAUMANN), 1878, A., 138.

benzoylacetate (BONNÉ), 1877, ii., 437.

benzoylallophanate (KRETZSCHMAR), 1877, i., 615.

benzoylglucolate (SENF), 1881, A., 1127.

benzoylnitrobenzoate (FITTICA), 1879, A., 153.

*p*-benzoylphenylcarbamate (*benzoylphenylurethane*) (DOEBNER and WEISS), 1882, A., 177; (DOEBNER), 1882, A., 508.

benzoylthiocarbamate (MIQUEL), 1877, i., 709; ii., 871.

benzylacetate (WISLICENUS), 1874, 885; 1876, i., 369; (EHR- LICH), 1877, ii., 438.

benzylethylacetate (CONRAD), 1878, A., 732.

benzylidene-acetoacetate and -malonate (CLAISEN), 1881, A., 405.

benzylmalonate (CONRAD), 1879, A., 707.

benzylmethylacetate (CONRAD), 1878, A., 732.

benzylmethylmalonate (CONRAD and BISCHOFF), 1880, A., 628.

"bisphenylthiothiocarbonate" (LIEBERMANN), 1882, A., 299.

borate, peculiar decomposition of (SCHIFF), 1877, ii., 874; 1878, A., 287.

bromacetate, action of ethyl bromide on (ARONSTEIN), 1881, A., 576.

*mono*- and *di*-bromacetates (KESSEL), 1879, A., 138, 220.

*di*bromacetate, preparation of (REMI), 1875, 1004.

bromanilate, action of sodium ethoxide on (BALBIANO), 1882, A., 168.

*di*bromethanetetra-carboxylate (CONRAD), 1881, A., 577.

**Ethyl bromide**, preparation of (ANON.), 1879, A., 127.

distillation of (NAUMANN), 1878, A., 138.

action of the dry copper-zinc couple on (GLADSTONE and TRIBE), 1874, 410.

action of bromine on (TAWILDAROFF), 1881, A., 398.

action of chlorine on (LESCŒUR), 1878, A., 718.

compound of thiocarbamide with (CLAUS), 1876, i., 572.

**Ethyl *o*-bromobenzoate** (RHALLIS), 1880, A., 119.

bromobutyrate (TUPOLEFF), 1874, 565.

- Ethylie** bromobutyrate, action of an alcoholate on (KRESTOWNIKOFF), 1881, A., 801.  
 action of finely divided silver on (HELL and MÜHLHÄUSER), 1880, A., 542.  
*di*bromodiphenylallopphanate (DENNSTEDT), 1880, A., 633.  
 2:5-bromonitrobenzoate (RHALLIS), 1880, A., 119.  
 bromo-*p*-nitrocinnamates, two isomeric (MÜLLER), 1882, A., 842.  
*p*-bromophenylamidoacetate (DENNSTEDT), 1880, A., 635.  
 bromophenylcarbamate (DENNSTEDT), 1880, A., 633.  
 $\alpha\beta$ -*di*bromo- $\beta$ -phenylpropionate (ANSCHÜTZ and KINNICUTT), 1878, A., 981.  
*p*-bromophenylthiocarbamate (*bromophenylthiourethane*) (DENNSTEDT), 1880, A., 634.  
 bromopropionate, action of metals on (SCHERKS), 1882, A., 38.  
*tri*bromopyruvate (KLIMENKO), 1876, i., 900; ii., 396.  
*di*bromosuccinate, action of ammonia on (CLAUS and HELPENSTEIN), 1881, A., 577; (LEHRFELD), 1882, A., 163.  
 action of potassium cyanide on (CLAUS and CALLIES), 1878, A., 566.  
*iso**di*bromosuccinate (PICTET), 1881, A., 253.  
*p*-bromosulphamidobenzoate and *p*-bromosulphobenzoate (BÖTTINGER), 1878, A., 730.  
 bromoisovalerate, action of, on sodium ethoxide (DUVILLIER), 1879, A., 706.  
*iso*butylacetoacetate (ROHN), 1878, A., 486.  
*iso*butylbromoacetoacetate, action of alcoholic potash on (DEMARÇAY), 1878, A., 661.  
*iso*butylchloromalonate and *iso*butylglycollate (GUTHZEIT), 1882, A., 39.  
*iso*butylic carbonate (RÖSE), 1881, A., 253.  
 sulphate (BEHREND), 1877, ii., 290.  
 butylic *di*thiocarbonate (MYLIUS), 1873, 266.  
*iso*butylmalonate (CONRAD and BISCHOFF), 1880, A., 628; (GUTHZEIT), 1882, A., 39.  
*iso*butyltartronate (GUTHZEIT), 1882, A., 39.  
 butyrates, boiling points of (SCHREINER), 1879, A., 522.  
*n*- and *iso*-butyrylglycollate (SENF), 1881, A., 1127.
- Ethylie** camphoronates, action of ammonia on (HJELT), 1880, A., 669.  
**Ethylie** carbamate (*urethane*) (SALOMON), 1873, 618; (CONRAD and SALOMON), 1875, 753.  
 action of acetic and benzoic chlorides on (KRETSCHMAR and SALOMON), 1874, 790; (KRETSCHMAR), 1875, 563; 1877, i., 614.  
 compounds of, with aldehydes (BISCHOFF), 1875, 146.  
 derivatives of (BISCHOFF), 1874, 890.  
**Ethylie** carbamineformate (*isocyanocarbonic ether*) (SALOMON), 1874, 791.  
 carbogallate (DRECHSEL and MÜLLER), 1878, A., 784.  
 carbonate (WILM), 1878, A., 851; (RÖSE), 1881, A., 252.  
 carbopyrotritate (HARROW), 1878, T., 433.  
*o*-carboxyphenyloxamate (*oxalylethylanthranilic acid*) (v. BAAYER), 1882, A., 1101.  
 carvacrylglycollate (SPICA), 1880, A., 889.  
 chloracetate, action of sodium ethoxide on (SENF), 1881, A., 1127.  
*dichloro*acetate, formation of, from chloral (CLAUS), 1878, A., 565.  
 action of potassium cyanide on (CLAUS and WEISS), 1878, A., 565; (CLAUS), 1878, A., 721; 1881, A., 798.  
*tri*chloroacetate (v. RICHTER), 1879, A., 139.  
 chloroacetoacetate (ALLIHN), 1878, A., 566.  
 action of fuming nitric acid on (PRÖPPER), 1882, A., 1193.  
 compounds of, with metals (ALLIHN), 1879, A., 915.
- Ethylie** chloride and its homologues.  
 preparation of (GROVES), 1874, 636.  
 heat of combustion of (BERTHELOT), 1881, A., 8.  
 heat of formation of (BERTHELOT), 1879, A., 870.  
 action of aluminium chloride on a mixture of naphthalene and (MARCHETTI), 1881, A., 1041.  
 action of, on benzene in presence of aluminium chloride (ALLBRIGHT, MORGAN and WOOLWORTH), 1878, A., 663.  
 action of sulphuric anhydride on (v. PURGOLD), 1873, 1216.  
 mercury derivative of (ANON.), 1874, 985.



- Ethylic chlorobenzylmalonate** (CONRAD), 1881, A., 168; 1882, A., 58; (BISCHOFF and EMMERT), 1882, A., 1208.
- $\alpha$ -chloroisobutylmalonate** (CONRAD and BISCHOFF), 1880, A., 629.
- $\beta$ -chlorobutyrate** (BALBIANO), 1878, A., 134, 658.
- action of aniline on (BALBIANO), 1880, A., 462.
- $\alpha$ -chlorisobutyrate** (BALBIANO), 1879, A., 615.
- action of potash on (TESTA), 1880, A., 870.
- chlorocarbonate.** See **Ethylic chloroformate.**
- $\alpha$ -chlorocrotonate**, action of potassium cyanide on (CLAUS), 1876, i., 934.
- $\beta$ -chlorocrotonate** (LAGERMARK), 1881, A., 413.
- action of potassium cyanide on (CLAUS and LISCHKE), 1881, A., 800.
- Ethylic chloroformate** (*chlorocarbonic ether*), action of, on *o*- and *p*-amidophenol (GROENVIK), 1877, i., 472.
- action of, on the amines (SCHREINER), 1880, A., 311.
- action of, on ammonium thiocyanate (DELITSCH), 1875, 358.
- action of, on *mono*- and *di*-amylamines (CUSTER), 1879, A., 913.
- action of, on benzene in presence of aluminium chloride (RENNIE), 1882, T., 33.
- action of, on potassium cyanate (WILM), 1878, A., 851.
- action of, on potassium-pyrroline (CIAMICIAN and DENNSTEDT), 1882, A., 606.
- action of, on sodium cyanamide (BÄSSLER), 1878, A., 214.
- Ethylic chlorofumarate**, action of potassium cyanide on (CLAUS), 1877, ii., 739.
- $\gamma$ -chloro- $\alpha$ -hydroxyangelate** (PINNER and KLEIN), 1879, A., 42.
- trichloro- $\alpha$ -hydroxypropionate**, easy method of preparing (NENCKI), 1878, A., 783.
- trichlorohydroxyvalerate** (PINNER and KLEIN), 1879, A., 42.
- chloro-maleamate**, and **-maleate** (CLAUS and VOELLER), 1881, A., 254.
- chloromaleate**, preparation of (CLAUS), 1878, A., 857.
- action of potassium cyanide on (CLAUS), 1877, ii., 739.
- chloromalonnate** (CONRAD and BISCHOFF), 1880, A., 629; 1882, A., 39; (CONRAD), 1881, A., 577.
- Ethylic chloromethanetricarboxylate** (CONRAD), 1881, A., 577.
- 5-chloronitrosalicylate** (SMITH and PEIRCE), 1880, A., 392.
- $\alpha\alpha$ -dichloropropionate** (BECKURTS and OTTO), 1877, ii., 181; 1878, A., 292.
- action of silver oxide on (KLIMENKO), 1875, 353.
- $\alpha\beta$ -dichloropropionate** (WERIGO and WERNER), 1874, 242.
- chlorosulphonate**, action of ethylic alcohol on (BEHREND), 1877, ii., 290; (CLAËSSON), 1879, A., 776.
- action of methylic alcohol and of water on (BEHREND), 1877, ii., 289.
- mono*- and *di*-chlorothioacetates** (MEYER), 1881, A., 890.
- chloro- $\alpha$ - and - $\beta$ -*mono*- and -*di*-thioformates** (SALOMON), 1873, 1222.
- chlorotiglate** (RÜCKER), 1878, A., 292.
- chloroxamate** (*oxamethane chloride*), reactions of (WALLACH and LIEBERMANN), 1880, A., 557.
- cholanate** (LATSCHINOFF), 1880, A., 722.
- cholate** (HÜFNER), 1879, A., 949.
- choloidate** (SPRINGER), 1881, A., 1161.
- cinnamate** (V. MILLER), 1878, A., 159; (ANSCHÜTZ and KINNICUTT), 1878, A., 981.
- citraconate** (PERKIN), 1881, T., 557; (PETRI), 1881, A., 1032.
- molecular refraction of (BRÜHL), 1882, A., 829.
- action of ammonia on (ANSCHÜTZ), 1882, A., 829.
- citrate** (CONEN), 1880, A., 36.
- action of sodium amalgam on (CLAUS), 1875, 1252.
- comenate** and **comenamate** (REIBSTEIN), 1882, A., 197.
- cyanacetoacetate** and its derivatives (HALLER and HELD), 1882, A., 1280.
- cyanamido-*mono*- and -*di*-carboxylates** and their metallic derivatives (BÄSSLER), 1878, A., 214.
- cyanate** (PONOMAREFF), 1882, A., 937.
- cyanide.** See **Propionitrile.**
- cyanoförmate** (HENRY), 1873, 381; (WEDDIGE), 1873, 381; 1875, 447.
- conversion of, into glycocine (ANGELBIS), 1875, 754.
- isocyanoförmate** (SALOMON), 1874, 791.
- cyanomalonnate**, and its salts (HALLER), 1882, A., 1139.

- Ethyl** cyanurate (PONOMAREFF), 1882, A., 937.  
 dehydromucate (HEINZELMANN), 1879, A., 141.  
 deoxalate (KLEIN), 1880, A., 37.  
 two isomeric modifications of (BRUNNER), 1879, A., 620.  
 diacetoxycoeninate (REIBSTEIN), 1882, A., 197.  
 diacetylmesoxalate (PETRIEFF), 1878, A., 490.  
 diacetylsuccinate (WISLICENUS), 1876, i., 367.  
   preparation of, and the action of dilute sulphuric acid on (HARROW), 1878, T., 427.  
 diallylacetate and its derivatives (WOLFF), 1878, A., 293.  
 diallylmalonate (CONRAD and BISCHOFF), 1880, A., 628.  
 diisomylcarbamate (CUSTER), 1879, A., 914.  
 dibenzoylhydroxamate. See  $\alpha$ - and  $\beta$ -Dibenzethylhydroxylamine.  
 dibenzoyl- $\beta$ -phenylglycerate (ANSCHÜTZ and KINNICUTT), 1878, A., 981; 1879, A., 645.  
 diisobutylacetate (MIXTER), 1874, 784.  
 diethoxyacetate (CLAISEN and MATTHEWS), 1882, T., 264.  
 diethoxyacetoacetate (CONRAD), 1878, A., 403.  
 diethylacetate (*hexoate*) (SAYTZEFF), 1878, A., 566.  
 diethylacetate (WISLICENUS), 1874, 884.  
   action of phosphorus pentachloride on (BURTON), 1882, A., 712.  
 diethylamidoacetate, ethiodide of (KRAUT), 1876, ii., 625.  
 diethylorthoglyoxylate (PINNER and KLEIN), 1879, A., 46; (GEUTHER), 1879, A., 220; (CLAISEN and MATTHEWS), 1882, T., 264.  
 diethylmalonate (CONRAD), 1879, A., 707.  
 diethyloxalate, action of phosphorus pentachloride on (MARKOWNIKOFF), 1874, 144.  
 diethylphosphinoacetate, ethochloride-, -bromide, and -iodide of (LETTS), 1882, A., 719.  
 diethylsuccinate (*suberate*), synthesis of (HELL), 1873, 495.  
 diethylsuccinates, two isomeric (HELL and MÜHLHÄUSER), 1880, A., 542.  
 diheptylacetate (JOURDAN), 1880, A., 314.
- Ethyl** dihydroxyterephthalate (*quinonchydronicarboxylate*) (HERRMANN), 1882, A., 714.  
 dimethyl- $\alpha$ -amidopropionate, methochloride of (BRÜHL), 1876, i., 698.  
 dimethylcarbamate (*dimethylamidoehtylic formate*) (SCHREINER), 1880, A., 312.  
 dimethylmalonate (THORNE), 1881, T., 543.  
 dimethylsulphamate (BEHREND), 1882, A., 1282.  
 dioctylacetate (GUTHZEIT), 1880, A., 872.  
 dioctylmalonate (CONRAD and BISCHOFF), 1880, A., 628.  
 diphenylcarbamate. See Diphenylurethane.  
 diphenyl-*o*-carboxylate (SCHMITZ), 1879, A., 164.  
 diphenyl-*p*-carboxylate (DOEBNER), 1874, 893.  
 diphenyldi-*o*-carboxylate (HUMMEL), 1879, A., 165.  
 diphenyldi-*p*-carboxylate (DOEBNER), 1874, 893.  
 diphenylmalate (REIMER), 1881, A., 48.  
 diphenylphosphinate (GÖTTER and MICHAELIS), 1878, A., 724.  
 diphenylsulphonate (GABRIEL and DEUTSCH), 1880, A., 477.  
 dipropylacetate, action of sodium-amalgam on (BURTON), 1882, A., 600.  
 di-*p*-tolylimidothiocarbamate (*p-tolylimidotolylethylthiocarbamate*) (WILL and BIELSCHOWSKI), 1882, A., 1091.  
 ethanesulphonate (KURBATOFF), 1875, 57.  
 ethanetetracarboxylate (CONRAD and BISCHOFF), 1880, A., 629.  
 ethanethiosulphonate. See Ethyl disulphoxide.  
 ethoxyacetate, action of sodium on (CONRAD), 1878, A., 403.  
*o*-ethoxybenzoate (GÖTTIG), 1877, i., 313.  
 $\alpha$ -ethoxybutyrate (DUVILLIER), 1878, A., 489.  
*oa*- and *ob*-ethoxyphenylacrylates, refractive indices of, and action of bromine on (PERKIN), 1881, T., 412.  
 ethoxyvalerate (DUVILLIER), 1878, A., 489.  
 ethylacetate, preparation of (CONRAD and LIMPACH), 1878, A., 781.  
   action of chlorine on (WISLICENUS), 1876, i., 370.

- Ethylic ethylbenzylhydroxamate.** See Benzdiethylhydroxylamine.
- ethylcarbamate** (*ethylamidoethylic formate*) (SCHREINER), 1880, A., 312.
- ethylchloromalonate** (GUTHZEIT), 1882, A., 39.
- ethyleyanamidocarboxylate** (BÄSSLER), 1878, A., 215.
- ethylenesalicylate** (WEDDIGE), 1880, A., 316.
- ethylenetetracarboxylate** (CONRAD), 1881, A., 169.
- ethylene- $\alpha$ -dithiodicarbonate** (WELDE), 1877, ii., 317.
- ethylenetetrathiodicarbonate** (WELDE), 1876, ii., 624; 1877, ii., 317.
- ethylenehexathiodicarbonate** (WELDE), 1877, ii., 318.
- ethylglycollate** (GUTHZEIT), 1882, A., 39.
- formation of (NORTON and TCHERNIAC), 1878, A., 972.
- ethylideneacetoacetate** (CLAISEN), 1881, A., 405.
- ethylidenedicarbamate.** See Ethylideneurethane.
- ethylmalonate** (MARKOWNIKOFF), 1877, i., 62; (CONRAD), 1879, A., 707.
- ethylmeconate** (OST), 1882, A., 601.
- ethylloxamate** (*ethylloxamethane*) (WALLACH and WEST), 1876, ii., 184; 1877, ii., 187.
- mono- and di-ethylloxamate, separation of** (WALLACH), 1875, 1187.
- ethyltartronate** (GUTHZEIT), 1882, A., 39.
- formate, action of a mixture of ethylic and allylic iodides on, in presence of zinc** (KANONNIKOFF and SAYTZEFF), 1877, ii., 298.
- orthoformate, reduction of** (LADENBURG), 1873, 48.
- formyltricarboxylate.** See Ethylic methanetricarboxylate.
- fumarate** (LAUBENHEIMER), 1873, 56.
- preparation of, and the action of sodium alcoholates on (PURDIE), 1881, T., 344.
- glutarate** (REBOUL), 1879, A., 134.
- glycocholate** (SPRINGER), 1881, A., 1160.
- glycollate, new method of preparing** (NORTON and TCHERNIAC), 1878, A., 971.
- glycollates** (SENF), 1881, A., 1127.
- boiling points of (SCHREINER), 1879, A., 522.
- Ethylic guanidinecarboxylate** (*guanoline*) (NENCKI), 1878, A., 780.
- n-heptoate** (GRIMSHAW and SCHORLEMMER), 1873, 1077; (MEHLIS), 1878, A., 135.
- n-heptylacetoacetate** (JOURDAN), 1880, A., 313.
- sec.-heptylmalonate** (VENABLE), 1881, A., 82.
- hexoate and its salts** (KELBE and WARTH), 1882, A., 711.
- hexoate** (*diethylacetate*) (SAYTZEFF), 1878, A., 566.
- hydrogen citrate and its derivatives** (CONEN), 1880, A., 36.
- 3:6-dihydroxyterephthalate** (HERRMANN), 1882, A., 714.
- sebate** (NEISON), 1876, i., 319.
- sulphate** (CLAËSSON), 1879, A., 776.
- electrolysis of (RENARD), 1880, A., 25.
- p-hydroxymesitylenate** (JACOBSEN), 1879, A., 643.
- p-hydroxyphenylcarbamate** (GROENVIK), 1877, i., 472.
- 2-hydroxyisophthalate** (MILLER), 1882, A., 405.
- "hydroxytetrolate"** (DUISBERG), 1882, A., 1192.
- hydroxyvivate** (JACOBSEN), 1881, A., 431.
- $\alpha$ -hydroxyisovalerate** (SCHMIDT and SACHTLEBEN), 1879, A., 140.
- hyoglycocholate and hyotaurocholate** (SPRINGER), 1881, A., 1161.
- imidosuccinamate** (LEHRFELD), 1882, A., 163.
- indoxanthidate, and indoxanthinate and its nitrosamine** (v. BAEYER), 1882, A., 1100.
- indoxylate** (v. BAEYER), 1882, A., 198.
- oxidation of, and action of nitrous acid on (v. BAEYER), 1882, A., 1100.
- iodacetate, action of ethylic iodide on** (ARONSTEIN and KRAMPS), 1880, A., 541.
- Ethylic iodide, action of the copper-zinc couple on** (GLADSTONE and TRIBE), 1873, 445.
- action of, on benzenylphenylenediamine (HÜBNER), 1878, A., 145.
- action of, on cotarnine, hydrocotarnine, and narcotine (BECKETT and WRIGHT), 1876, i., 165.
- action of, on narceine (BECKETT and WRIGHT), 1875, 703.
- action of, on tetracodeine and octacetyl tetracodeine (BECKETT and WRIGHT), 1875, 314.

**Ethylie iodide**, action of, on acetylated morphine and codeine derivatives and analogous products (BECKETT and WRIGHT), 1875, 318.  
 influence of, on germination (RABUTEAU), 1880, A., 915.  
**Ethylie isatogenate** (v. BAEYER), 1882, A., 198.  
 constitution of (v. BAEYER), 1882, A., 1101.  
 action of some reagents on (v. BAEYER), 1882, A., 620.  
**isethionate** (STEMPNESKY), 1882, A., 487.  
**itaconate** (PETRI), 1881, A., 1032; (ANSCHÜTZ), 1882, A., 829.  
 lactates, boiling points of (SCHREINER), 1879, A., 522.  
**levulinate** (CONRAD), 1878, A., 137.  
*i-malate* (PURDIE), 1881, T., 351.  
**malonate** (CONRAD), 1879, A., 707.  
 action of water on, at a high temperature (HJELT), 1881, A., 155.  
**mesaconate** (PERKIN), 1881, T., 554; (PETRI), 1881, A., 1032.  
 molecular refraction of (BRÜHL), 1882, A., 829.  
**methanetricarboxylate** (*formyltricarboxylate*) (CONRAD), 1879, A., 707, 918.  
 **$\alpha$ -methoxybutyrate** (DUVILLIER), 1879, A., 523.  
**methylacetoacetate** (WISLICENUS), 1876, i., 369.  
 action of hydrochloric and hydrocyanic acids on (KÖNIC), 1879, A., 706.  
 **$\alpha$ -methylacetylsuccinate** (KRESSNER), 1878, A., 783.  
 **$\beta$ -methylacetylsuccinate** (CONRAD), 1878, A., 137.  
 **$\alpha$ - and  $\beta$ -methylacetylsuccinates**, and their salts (BISCHOFF), 1881, A., 412.  
**methylcarbamate** (*methylamidooethylie formate*) (SCHREINER), 1880, A., 311.  
**methylethylacetoacetate** (WISLICENUS), 1876, i., 369; (SAUR), 1878, A., 27.  
**methylethylmalonate** (CONRAD and BISCHOFF), 1880, A., 627.  
 **$\alpha$ -methylglutarate** (WISLICENUS and LIMPACH), 1878, A., 784.  
**methylloxamate** (*methylloxamethane*) (WALLACH and WEST), 1876, ii., 184; 1877, ii., 186.  
**methylpropylacetate** (SAYTZEFF), 1878, A., 566.  
 **$\beta$ -naphthyl-carbamate and -thiocarbamate** (COSINER), 1881, A., 606.

**Ethylie  $\alpha$ -naphthylloxamate** (BALLÓ), 1873, 913.  
**neurostearate** (THUDICHUM), 1882, A., 537.  
**nitrate** (DE FORCRAND), 1879, A., 621.  
 preparation of (DE FORCRAND), 1880, A., 32; (LEWKOWITSCH), 1880, A., 33.  
**nitraetoacetate**, products of the decomposition of (STEINER), 1882, A., 1280.  
**Ethylie nitrate**, preparation of (BERTONI), 1877, i., 449.  
 ebullition volume of (RAMSAY), 1879, T., 472.  
 reduction of, by alcohol (BERTRAND), 1881, A., 242.  
 action of, on benzoic acid in presence of concentrated sulphuric acid (FITTICA), 1876, ii., 411.  
**Ethylie nitrite** (*nitrous ether*), production of, by means of sulphovinic acid (PHIPSON), 1875, 747.  
**3:5-dinitrobenzoate** (BEILSTEIN and KURBATOFF), 1880, A., 471.  
**nitrocinnamates**, action of bromine on (MÜLLER), 1882, A., 841.  
**6-nitrocinnamate dibromide** (DREWSEN), 1882, A., 846.  
 **$o$ - and  $p$ -nitrocinnamate dibromide**, action of alcoholic potash and of water on (MÜLLER), 1882, A., 841.  
**nitrocomenate** (REIBSTEIN), 1882, A., 197; (OST), 1882, A., 601.  
 **$\alpha$ - and  $\beta$ -nitromesitylenate** (SCHMITZ), 1879, A., 156.  
**1-nitronaphthalene-3'- and -4'-sulphonates** (CLEVE), 1878, A., 153.  
 **$p$ -nitrophenylacetate** (MAXWELL), 1880, A., 120.  
 **$o$ -nitrophenylcarbamate** (RUDOLPH), 1879, A., 921.  
**nitrophenylnitrosoacetate** (GABRIEL and MEYER), 1881, A., 730.  
 **$p$ -nitrophenyl- $\psi$ -thiocarbamate** (LOSANITSCH), 1881, A., 955.  
**4-nitrophthalate** (MILLER), 1878, A., 982.  
**dinitrophthalate** (BEILSTEIN and KURBATOFF), 1880, A., 478.  
 **$\beta$ -nitropropionate**, preparation of (LEWKOWITSCH), 1880, A., 33.  
**nitropyruvate** (KLINKHARDT), 1882, A., 499.  
**3:5-dinitrosalicylate** (SALKOWSKI), 1875, 71.  
**nitrosoacetoacetate** (MEYER and ZÜBLIN), 1878, A., 487; (WLEÜGEL), 1882, A., 949.



**Ethylie nitrosobenzylmalonate** (CONRAD and BISCHOFF), 1880, A., 629.  
 nitrosomalonate and its derivatives (CONRAD and BISCHOFF), 1882, A., 39, 629.

$\alpha$ -nitrosopropionate (MEYER and ZÜBLIN), 1878, A., 659.

isooctoate (WILLIAMS), 1879, T., 129.

octylacetoacetate and its derivatives (GUTHZEIT), 1880, A., 871.

**Ethylie oxalate**, action of allylic iodide and zinc on (PATERNO and SPICA), 1877, i., 60; (SAYTZEFF), 1877, i., 455.

action of, on naphthylamine (BALLÖ), 1873, 913.

action of phosphorus pentachloride on (v. RICHTER), 1879, A., 138.

compound of with thiocarbamide (NENCKI), 1874, 981, 1088.

separation of ethyl bases by (WALLACH), 1875, 1187.

**Ethylie oxalurate** (GRIMAU), 1875, 564; (SALOMON), 1876, ii., 74.

**Ethylie oxamate** (*oxamethane*), action of acetic and benzoic chlorides on (KRETZSCHMAR and SALOMON), 1874, 790; (KRETZSCHMAR), 1875, 563; 1877, i., 614.

action of phosphorus pentachloride on (WALLACH), 1875, 883.

cyanurate of (GRIMAU), 1875, 564.

**Ethylie pentanetricarboxylate** (WALTZ), 1882, A., 948.

phenylacetate, action of sodium on (HODGKINSON), 1880, T., 481.

phenylacetylsuccinate (RÜGHEIMER), 1881, A., 600.

phenylborate (MICHAELIS and BECKER), 1882, A., 732.

phenyldichloroxamate (KLINGER), 1875, 1025; 1877, i., 711.

*m*-phenylenediamidodiacetate (ZIMMERMANN), 1882, A., 957.

*p*-phenylenedimethylidamine ethoxamate, action of nitrous acid on (WURSTER and SENDTNER), 1880, A., 110.

*m*-phenylenediglycolate. See Ethylie *m*-phenylenediamidodiacetate.

phenylethyl- $\psi$ -thiocarbamate (LIEBERMANN), 1881, A., 44.

phenylethylthiocarbamate (BERNTSEN and FRIESE), 1882, A., 966.

phenyloxamate, action of phosphorus pentachloride on (KLINGER), 1875, 1025; 1877, i., 711.

*p*-phenylenediamidodiacetate (ZIMMERMANN), 1881, A., 176.

**Ethylie phenylthiocarbamate** (*phenylthiourethane*) (LIEBERMANN and VÖLTZKOW), 1880, A., 659; (LIEBERMANN), 1881, A., 44.

phenyl- $\psi$ -thiocarbamate (LIEBERMANN), 1881, A., 44; 1882, A., 298.

mercury salt of (STEPHANOWITZ), 1874, 992.

phenyldithiocarbamate (*phenyldithiourethane*) (BERNTSEN and FRIESE), 1882, A., 966; (WILL), 1882, A., 1089.

phoronate (PINNEN), 1881, A., 797.

phosphanilidosulphonate (LAAR), 1880, A., 321.

phosphénylate (MICHAELIS and BENZINGER), 1876, i., 598; (KÖHLER and MICHAELIS), 1877, ii., 449.

phosphite, constitution of (ZIMMERMANN), 1874, 655; 1875, 440.

phthalate (MICHAEL), 1881, A., 1147.

phthalylglycolate (SENF), 1881, A., 1127.

propargylpentacarboxylate (BISCHOFF and EMMERT), 1882, A., 1191.

propionylglycolate (SENF), 1881, A., 1127.

$\alpha$ -propionylpropionate (HELLON and OPPENHEIM), 1877, ii., 439.

propylacetoacetate, decomposition products of (BURTON), 1882, A., 599.

propylcarbamate (*propylamidoehtylic formate*) (SCHREINER), 1880, A., 312.

propylic carbonate (RÜSE), 1881, A., 252.

isopropylmalonate (CONRAD and BISCHOFF), 1880, A., 627.

pulvate (SPIEGEL), 1881, A., 97.

pyromucate, and its tetrabromide (TÖNNIES), 1878, A., 786.

pyrotritate (HARROW), 1878, T., 431.

pyrrolinocarbamate (*tetrolurethane*) (CIAMICIAN and DENNSTEDT), 1882, A., 606.

pyruvate (BÖTTINGER), 1881, A., 418.

quinonehydrodicarboxylate. See

Ethylie dihydroxyterephthalate.

racemate (KLEIN), 1880, A., 37.

salicylate (GÖTTIG), 1877, i., 313.

salicylglycolate (SENF), 1881, A., 1127.

santonate (SESTINI), 1877, i., 90.

sebate (NEISON), 1876, i., 318.

selenide (v. PIEVERLING), 1877, i., 290; 1878, A., 129.

orthosilicate. See Silicic ether.

sodacetate, action of chloroform on (OPPENHEIM and PFAFF), 1874, 1161.

**Ethylie** sodacetate, derivatives of (MIXTER), 1874, 784.

sodacetacetate, preparation of solid (HARROW), 1878, T., 426.

action of benzoic and benzylic chlorides on (WISLICENUS), 1874, 885.

sodium thiosulphate (RAMSAY), 1875, 687.

suberate. See Ethylic diethylsuccinate.

succinate, action of bromine on (URECH), 1881, A., 248, 414.

action of the alkali metals on (WISLICENUS), 1876, i., 371; (HERRMANN), 1877, ii., 319; 1882, A., 712.

action of potassium on (REMSEN), 1875, 1251; 1876, i., 564.

isosuccinate (ZÜBLIN), 1879, A., 783.

decomposition of, by heat (KRESTOWNIKOFF), 1877, ii., 442.

succinocyanate (MÖLLER), 1881, A., 259.

succinylpropionate (HERRMANN), 1882, A., 713.

succinylsuccinate, preparation of (HERRMANN), 1882, A., 712.

action of phosphorus pentachloride on (REMSEN), 1876, i., 697.

decomposition of, in alkaline solutions in the absence of air (HERRMANN), 1877, ii., 319.

**Ethylic sulphate** (v. ORLOWSKY), 1875, 875; 1876, ii., 61; (CLAËSSON), 1880, A., 28; (STERNENSKY), 1882, A., 487.

preparation of (CLAËSSON), 1879, A., 775; (VILLIERS), 1880, A., 797.

action of ammonia and amines on (CLAËSSON and LUNDVALL), 1881, A., 240.

and its salts, decomposition of, by gaseous hydrochloric acid (KÖHLER), 1879, A., 137.

barium salt of, action of ammonium sulphate on (KÖHLER), 1879, A., 137.

**Ethylic sulphides** (CLAËSSON), 1877, i., 585; ii., 111, 296.

sulphite, constitution of (MICHAELIS and WAGNER), 1875, 139.

tartrate, action of zinc ethyl on (MULDER and v. DER MEULEN), 1881, A., 714.

d-tartrate (ANSCHÜTZ and PICTET; ANSCHÜTZ), 1880, A., 876.

teracrylate (ANTHOR), 1882, A., 46.

terephthalate, melting point of (BERGER), 1878, A., 152.

**Ethylic tetracetylquinat** (FITTIG and HILLEBRAND), 1879, A., 159.

tetrenecarbonate. See Ethylic pyrrolinocarbamate.

thioacetate (MICHLER), 1875, 258, 761.

boiling point of (WALLACH and BLEIETREY), 1879, A., 786.

thio- and isothio-allophanates (PEITZSCH and SALOMON), 1874, 364.

dithioallophanate (BLANKENHORN), 1878, A., 215.

$\alpha$ -thiocarbamate (PINNER and SCHAUMANN), 1881, A., 811.

$\alpha$ - and  $\beta$ -thiocarbamates (CONRAD and SALOMON), 1875, 753; (BLANKENHORN), 1878, A., 215.

dithiocarbamate (CONRAD and SALOMON), 1875, 753.

$\alpha$ - and  $\beta$ -thiocarbonates (SALOMON), 1873, 617.

$\alpha\alpha$ -dithiocarbonate (SALOMON), 1873, 618.

$\alpha\beta$ -dithiocarbonate (*xanthic acid*) (SALOMON), 1873, 618; (WELDE), 1876, ii., 624.

as a precipitant for albumin (ZÖLLER), 1880, A., 765.

potassium salt of, as an antiseptic (ZÖLLER), 1877, ii., 954.

as a remedy against phylloxera (ZÖLLER and GRETE), 1876, i., 106.

estimation of carbon disulphide, copper, and caustic alkalis by means of (GRETE), 1876, ii., 551; 1877, ii., 929; 1878, A., 341.

amide of (WELDE), 1876, ii., 624; 1877, ii., 314.

mixed ethers of (SALOMON), 1874, 362.

distillation-products of (FLEISCHER and HANKÓ), 1878, A., 29.

trithiocarbonate (SALOMON), 1873, 618.

thiocarbonates and their derivatives (SALOMON), 1873, 617, 1222.

indices of refraction of the (WIEDEMANN), 1873, 620.

thiocyanacetate (CLAËSSON), 1878, A., 37.

products of the decomposition of (CLAËSSON), 1881, A., 716.

$\psi$ -thiocyanacetate (CLAËSSON), 1878, A., 37.

**Ethylic thiocyanate** (MEYER and WURSTER), 1873, 1224; (CLAËSSON), 1878, A., 38.

- Ethylie thiocyanate**, action of gaseous hydrochloric acid on, in presence of absolute alcohol (PINNER and SCHAUHMANN), 1881, A., 811.  
chlor-, and oxidation of, into  $\beta$ -chlor-ethanesulphonic acid (JAMES), 1879, T., 806.
- Ethylie thiocyanofornates** and their metallic derivatives (HENRY), 1875, 57.
- thiocyanopropionate (FREYTAG), 1880, A., 312.
- trithiodicarbonate (WELDE), 1877, ii., 314.
- thioorthoformate (GABRIEL), 1877, ii., 311.
- thioglycollate (BÖTTINGER), 1879, A., 138.
- thio-oxamate (WEDDIGE), 1874, 566.
- thiophosphenylate (KÖHLER and MICHAELIS), 1876, ii., 525.
- thymylglycollate (SPICA), 1880, A., 889.
- toluene-*p*-thiosulphonate (*tolyl ethyl disulphoxide*), synthesis of (OTTO), 1882, A., 832.
- o*- and *m*-tolylcarbamates (COSACK), 1880, A., 245, 713.
- p*-tolyl-dichloroxamate (KLINGER), 1877, i., 712.
- tolylenedicarbamate (LUSSY), 1875, 274.
- p*-tolylloxamate, action of phosphorus pentachloride on (KLINGER), 1877, i., 710.
- p*-tolyl- $\beta$ -thiocarbamate (LIEBERMANN and NATANSON), 1881, A., 45.
- p*-tolyl-*mono*- and *di*-thiocarbamates (WILL and BIELSCHOWSKI), 1882, A., 1091.
- trimethylphenyl-carbamate and -thiocarbamate (EISENBERG), 1882, A., 956.
- 2:4:6-trimethylpyridinedicarboxylate (HANTZSCH), 1881, A., 1029.
- tropate (LADENBURG), 1879, A., 720.
- n*-valerate (LIEBEN and ROSSI), 1873, 367.
- isovalerate, density, boiling point and rotatory power of (PIERRE and PUCHOT), 1873, 1017.
- veratrate (TIEMANN and MATSMOTO), 1876, ii., 524.
- xanthacetate (CECH and STEINER), 1875, 1255.
- Ethylidene chlorhydrin**. See Ethylie alcohol,  $\omega$ -chlor-.
- ethylate. See Ethylorthacetalddehyde.
- Ethylidene-*m*-amidobenzoic acid** (SCHIFF), 1882, A., 303.
- "Ethylidenediacetamide, trichlor-"** (HEPP), 1878, A., 66.
- Ethylidenedibenzamide** and *trichlor-* (HEPP and SPIESS), 1877, i., 314.
- Ethylidenediphenyldiacetamide, trichlor-** (HEPP), 1878, A., 66.
- Ethylidenedisulphuric acid**. See *as*-Ethanedisulphonic acid.
- Ethylideneimide** silver nitrate (LIEBERMANN and GOLDSCHMIDT), 1878, A., 286; (GOLDSCHMIDT), 1878, A., 965.
- silver sulphate (MIXTER), 1880, A., 234.
- Ethylidenephénylhydrazine**. See Acetaldehydephenylhydrazone.
- Ethylideneurethane** (NENCKI), 1874, 458; (BISCHOFF), 1874, 890.
- chlor- (BISCHOFF), 1874, 890.
- Ethylidenic bromide**. See Ethane, *as*-dibrom-.
- bromiodide. See Ethane, *as*-bromiod-.
- dichloride. See Ethane, *as*-dichlor-.
- chlorobromide. See Ethane, *as*-chlorobrom-.
- chloriodide. See Ethane, *as*-chloriod-.
- diiodide. See Ethane, *as*-diiod-.
- oxychloride. See Diethylie oxide, *di*-chloro-.
- Ethylindoxyl** (v. BAEYER), 1882, A., 199.
- nitrosamine of (v. BAEYER), 1882, A., 1102.
- Ethylindoxylie acid** and nitroso- (v. BAEYER), 1882, A., 198.
- Ethylmalonic acid** ( *$\alpha$ -isopyrotartaric acid*) and its salts (WISLICIENUS and URECH), 1873, 376; (TUPOLEFF), 1874, 568; (MARKOWNIKOFF), 1877, i., 61.
- brom- (CLAUS), 1878, A., 857.
- Ethylmauveine** and its salts (PERKIN), 1879, T., 721.
- Ethylmethyl-**. See Methyl-ethyl-.
- Ethylmorphine**. See Codethyline under Alkaloids.
- $\alpha$ -Ethyl-naphthalene**, and its picrate and tribrom- (CARNELUTTI), 1881, A., 280.
- $\beta$ -Ethyl-naphthalene** and its derivatives (MARCHETTI), 1882, A., 410.
- Ethyl- $\alpha$ -naphthol**, brom- (MARCHETTI), 1880, A., 260.
- Ethyl- $\beta$ -naphthol** (MARCHETTI), 1882, A., 410; (NIETZKI), 1882, A., 736.
- Ethyl-naphthylamidine**. See Naphthyl-ethenylamidine.
- Ethyl-naphthylamine**. See Naphthyl-ethylamine.
- Ethyl-nitr-*o*-amidonitrosophenetoil**. See *o*-Ethylamidophenol, nitronitrosamine of.

- Ethylnitrolic acid** (MEYER), 1874, 365, 677; 1875, 557; (GUTKNECHT), 1880, A., 712.  
 new method of preparing (MEYER and LOCHER), 1875, 57.  
 constitution of (MEYER and LOCHER), 1874, 982.  
 action of tin and hydrochloric acid on (MEYER and LOCHER), 1876, i., 904.
- Ethylnitrous acid** (CHANCEL), 1882, A., 711.
- Ethylorcinol**, nitr- (WESELSKY and BENEDIKT), 1881, A., 1140.
- Ethyloxalic bromide** (v. RICHTER), 1879, A., 139.
- Ethyloxalic chloride** (HENRY), 1873, 264; (v. RICHTER), 1879, A., 139.  
 action of, on thiocarbamide (PEITZSCH), 1874, 1161.
- Ethyloxamethane**. See Ethylic ethyloxamate.
- Ethyloxamide** (WALLACH and SCHULZE), 1880, A., 547.  
 action of phosphorus *pentachloride* on (WALLACH), 1881, A., 718.
- Ethyloxanthranol** (LIEBERMANN), 1881, A., 100; (LIEBERMANN and LANDSHOFF), 1881, A., 607; 1882, A., 861.
- Ethyloxanthranyl chloride** (LIEBERMANN and LANDSHOFF), 1881, A., 608; 1882, A., 862.
- Ethyloxyanthrone**. See Ethyloxanthranol.
- Ethylphenanthraquinol**, preparation and chemical reactions of (JAPP), 1880, T., 408.
- Ethyl-phenol and -phenetol**, *o*-amido-, and their salts (FÜRSTER), 1880, A., 463.
- o*-**Ethylphenol** and its derivatives (CIAMICIAN), 1880, A., 39, 126; (SUIDA and PLOHN), 1881, A., 268.
- Ethylphenolsulphonic acid** (CHRUSTSCHOFF), 1875, 162.
- Ethylphenyl-**. See also Phenylethyl-.
- Ethylphenylacetaldehyde** (ETARD), 1881, A., 582.
- Ethylphosphobetaine**. See Diethylphosphinoacetic acid.
- Ethylphosphoric di- and tetra-chloride** (MICHAELIS), 1881, A., 158.
- Ethylphosphorous dichloride**, preparation and physical properties of (THORPE), 1880, T., 345.  
 action of phosphorus chlorides and phosphorous acid on (CHAMBOX), 1877, i., 292.
- oxychloride** (MICHAELIS), 1881, A., 159.
- Ethylphthalic acid** (MICHAEL), 1881, A., 1147.
- Ethylphthalimide**, action of bromine on (MICHAEL), 1878, A., 70.  
 action of phosphorus *pentachloride* on (WALLACH and KAMENSKI), 1881, A., 285.  
*tribrom-* (MICHAEL), 1878, A., 70.
- 4-Ethylpiperidinemethylene iodide**, and its derivatives (LADENBURG), 1882, A., 534.
- Ethylisopropylisobutylphosphine** (v. HOFMANN), 1873, 883.
- Ethylpropylcarbinol** (*sec*-*hexylic alcohol*) (VÖLKER), 1876, i., 364; (OECHSNER DE CONINCK), 1876, i., 694.
- Ethylpropylene**. See  $\beta$ -Amylene.
- 3-Ethylpyridine** ( $\beta$ -*lutidine*) (WISCHNEGRADSKY), 1880, A., 269.  
 chemical reactions and salts of (OECHSNER DE CONINCK), 1881, A., 56, 288; (WILLIAMS), 1882, A., 309.  
 oxidation of (OECHSNER DE CONINCK), 1881, A., 443, 612.  
 reduction of (WISCHNEGRADSKY), 1881, A., 444.  
 physiological action of (WILLIAMS and WATERS), 1881, A., 1058.  
*trichlor-*, *platinochloride* (WILLIAMS), 1882, A., 311.
- 1-Ethylpyridine** (OECHSNER DE CONINCK), 1881, A., 56.
- Ethylpyrogallol** (*dihydroxyethoxybenzene*) (BENEDIKT), 1876, i., 916; (v. HOFMANN), 1878, A., 870.  
 nitr- (WESELSKY and BENEDIKT), 1882, A., 53.
- Ethylpyrrolone** (BELL), 1876, ii., 630; 1879, A., 525.  
 formation of, from ethylsuccinimide (BELL), 1880, A., 630.
- Ethylpyrrolinedicarboxylic acid** (BELL), 1879, A., 525.
- Ethylquinidine**, salts of, rotatory power of (HOWARD), 1873, 1180.  
 sulphatoperiodides of (JÖRGENSEN), 1877, i., 714.
- Ethylquinol**, nitr-. See Nitro-*p*-hydroxyethoxybenzene.
- Ethylquinoline bromide**, brom-, and its derivatives (BEREND), 1882, A., 530.
- 3'-Ethylquinoline and 2'-chlor-** (v. BAEYER and JACKSON), 1880, A., 407.
- Ethylresazurin** (WESELSKY and BENEDIKT), 1881, A., 726.
- Ethylresorcinol**. See Hydroxyethoxybenzene.
- Ethylsalicylic alcohol**. See *o*-Ethoxybenzylic alcohol.



- Ethylstilbene** (*ethylbiphenylethylene*) (SÖLLSCHER), 1882, A., 1292.
- Ethylsuccinic acid** (*butanedicarboxylic acid*) and its salts (HUGGENBERG), 1876, i., 565; 1878, A., 782; (THORNE), 1881, T., 338.
- Ethylsuccinimide** (MENSCHUTKIN), 1876, ii., 626; (LEHRFELD), 1882, A., 163.
- Ethylsulphacetic acid.** See Ethylthioglycollic acid.
- Ethylsulphinic acid.** See Ethanesulphinic acid.
- Ethylsulphonic acid.** See Ethanesulphonic acid.
- Ethylsulphuric acid** (*sulphovinic acid*) and its salts (BERTHELOT), 1873, 869.  
brom- (BEILSTEIN and WIEGAND), 1882, A., 1179.
- Ethyltartronic acid** ( *$\alpha$ -hydroxyethylmalonic acid*) (CONRAD), 1881, A., 577; (CONRAD and BISCHOFF), 1882, A., 39.
- Ethylterpene.** See Eterpene.
- Ethyltheobromine** (PHILIPS), 1877, i., 93.
- Ethylisothioacetanilide**, boiling point of, and action of, on aniline and oxalic acid (WALLACH and BLEIBTRETU), 1879, A., 786.
- Ethylthiocarbanilide.** See Diphenylethyl- $\psi$ -thiocarbanilide.
- Ethylthiocarbimide**, a new formation of (MICHAEL), 1881, A., 1128.  
oxide of (SELL), 1873, 881.
- Ethylthioglycollic acid** (*ethylsulphacetic acid*) (CLAËSSON), 1876, i., 567.
- Ethylthymol**, 2:6-dinitr- (LADENBURG and ENGELBRECHT), 1878, A., 60.
- Ethyltoluene.** See Methyl ethylbenzene.
- Ethyluramidobenzoic acid** (GRIESS), 1873, 72.
- Ethylurethane benzoate** (WACHENDORFF), 1878, A., 674.
- Ethylvanillin** (TIEMANN), 1876, i., 76; (V. MILLER), 1878, A., 159.
- Ethyl-m-xylene** (1:3:5-dimethylthylbenzene) (WROBLEWSKI), 1876, ii., 406; 1878, A., 978.
- Ethylxylene**, dinitr- (ROMMIER), 1873, 887.
- Etiolin** (VINES), 1878, T., 381.
- Ettringite**, a new mineral from Ettringen in the Laach district (LEHMANN), 1874, 878.
- Eucalyptol.** See Cineol under Terpenes.
- Eucalyptus**, analyses of the ash of the wood of the two varieties of (SMITH), 1880, T., 416.
- Eucalyptus Globulus** (RABUTEAU), 1873, 403; (V. HARTSEN), 1876, i., 615, 942.  
chlorophyll from (SCHUNCK), 1880, A., 894.  
oil of (FAUST and HOMMEYER), 1875, 371; (HOMMEYER), 1876, i., 244.
- Euclease** (GORCEIX), 1878, A., 118.
- Euchlorine** (V. PEBAL), 1875, 1157.
- Euchlorite.** See Biotite.
- Eucrasite**, a new mineral from Brevig (PAIKKULL), 1879, A., 31.
- Eudiometer** (DUPRÉ), 1875, 788; (SOKOLOFF), 1882, A., 551.  
beetle (MÜLLER-ERZBACH), 1873, 292.  
combustion in (SCHÜTZENBERGER), 1878, A., 548.
- Eugenol**, preparation of pure (WASSERMANN), 1876, i., 706.  
constitution of (TIEMANN), 1878, A., 577.  
relative constitution of (WASSERMANN), 1876, i., 706.  
constitution of the radicle  $C_8H_5$  in (ERLENMEYER), 1877, ii., 479.  
action of, on chloracetic acid (SAARBACH), 1880, A., 393.  
oxidation of (WASSERMANN), 1876, i., 706.  
substituted (CAHOUS), 1877, i., 460; ii., 478.  
nitr-, and its derivatives (WESELSKY and BENEDIKT), 1882, A., 1200.
- Eugenylacetic acid** (SAARBACH), 1880, A., 393.
- Eukrite** of the Rådmons Island in Upland (OBERG), 1874, 347.
- Eulytite** (*eulytin*) (FRENZEL), 1874, 447.
- Euosmite** (DOELTER), 1881, A., 359.
- Euphorbia amygdaloids** and *Herniaria glabra* (WITTSTEIN), 1877, i., 487.
- Euphorbone** (HERSE), 1878, A., 800.
- Euphotide** of Elba (COSSA), 1881, A., 537.
- Eupittonic acid** (*cupittonic; pittacal*) (LIEBERMANN), 1876, ii., 101; 1878, A., 799; (V. HOFMANN), 1878, A., 871; 1880, A., 164, 249; (GRÄTZEL), 1879, A., 253.  
formation and homologue of (V. HOFMANN), 1880, A., 248.
- Eurotin** (KORSCHULT), 1879, A., 415.
- Euxanthone**, and its derivatives (SALZMANN and WICHELIUS), 1878, A., 79; (GRAEBE and EBRARD), 1882, A., 1301.  
synthetical preparation of (MICHAEL), 1881, A., 592.

- Euxenite** (SMITH), 1877, ii., 715.  
 crystallographic examination of (BRÖGGER), 1881, A., 398.
- Evaporation**, experiments on (STEFAN), 1874, 529; (BAUMGARTNER), 1878, A., 6; (SORAUER), 1881, A., 1059.  
 without fusion (MEYER), 1881, A., 133, 678.  
 circuit produced by (MOSE), 1881, A., 1092.  
 cooling effects produced by capillarity in connection with (DECHARME), 1874, 118, 219.  
 of superheated liquids (GERNEZ), 1876, i., 868.  
 cheap method of, suitable for works' laboratories (ТРАУ), 1876, ii., 336.
- Evaporator** for large quantities of liquid (BRUGNATELLI), 1878, A., 634.  
 for water analysis (MILLS), 1878, T., 62; (DUPRÉ and HAKE), 1879, T., 165.
- Evergreens**, action of frost on (MOLL), 1882, A., 549.
- Erodia glauca* (MARTIN), 1879, A., 333.
- Ewes' milk**. See Milk under Agricultural Chemistry.
- Excreta**, occurrence of morphine in (VOGT), 1876, i., 280.  
 nitrogenous constituents of (KENNEPOHL), 1881, A., 1058.  
 human, volatile constituents of (BRIEGER), 1878, A., 437.  
 utilisation of (SCHWARZ), 1876, ii., 313.
- Excretin** and *dibrom*-(HINTERBERGER), 1873, 920.
- Expansion** of liquid carbon compounds (WIEBE), 1879, A., 1002; 1880, A., 88, 784.  
 of the solid elements (WIEBE), 1878, A., 549; 1879, A., 1002; 1880, A., 783.  
 thermic and mechanical, of solid compounds (KURZ), 1874, 221, 767.  
 of liquids, by absorption of gases (MACKENZIE and NICHOLS), 1878, A., 366.  
 of water by the absorption of gases (ÅNGSTRÖM), 1882, A., 687.  
 by heat (VOLKMANN), 1882, A., 135.
- Expansion coefficient** of butter, lard, fats, etc. (WIGNER), 1880, A., 70.  
 of glass, variations in (CRAFTS), 1880, A., 841.  
 of lead iodide, and of silver-lead iodide (RODWELL), 1881, A., 495, 966.
- Expansion coefficient** of liquid methylic chloride (VINCENT and DELACHANAL), 1879, A., 294.  
 of mercuric iodide (RODWELL and ELDER), 1880, A., 443.  
 of incandescent platinum (NICHOLS), 1882, A., 354.  
 and contraction coefficient of silver and cuprous iodides and their alloys (RODWELL), 1882, A., 570.
- Expansion**. See also Thermochemistry.
- Explosion**, suddenness of detonation as compared with (ABEL), 1879, A., 847.  
 spontaneous, application of the principle of dissimilar molecules to (PFAUNDLER), 1877, i., 435.  
 produced while heating wine (WARTHA), 1881, A., 479.  
 with hydrogen generators, how to avoid (FRESENIUS), 1874, 538.  
 in gases, propagation of (BERTHELOT), 1882, A., 685; (BERTHELOT and VIEILLE), 1882, A., 685, 1260, 1261.  
 of endothermic compounds in general (BERTHELOT), 1882, A., 458.  
 of nitromannitol (SOKOLOFF), 1879, A., 1080.  
 in collieries. See Collieries.  
 in flour mills. See Flour mills.  
 See also Detonation.
- Explosive agents**, history of (ROUX and SARRAU), 1874, 119; 1875, 126; 1876, ii., 168; (ABEL), 1874, 536; 1879, A., 846.  
 especially gunpowder, application of thermochemical theories to (CASTAN), 1874, 1050.  
 decomposition of, compared with the phenomena of supersaturation (CHAMPION and PELLET), 1873, 1103.  
 analogy between the decomposition of certain, and the disengagement of gases from their supersaturated solution (GERNEZ), 1875, 417.
- Explosive mixtures**, direct determination of the degree of intensity of (CHABRIER), 1874, 1023.  
 of air with combustible powders (BERTHELOT), 1879, A., 412.  
 of hydrogen and oxygen in closed vessels, heat of combustion of the (V. THAN), 1877, ii., 690.  
 of a solution of phosphorus in carbon disulphide (PROCTER), 1879, A., 996.
- Explosives**, new (SCHWARZ), 1878, A., 350.

**Explosives**, new class of, which are non-explosive during manufacture and transport (SPRENGEL), 1873, 796.

improvements in the manufacture of certain (COTTE), 1879, A., 422.

heat of formation of (SARRAU and VIEILLE), 1881, A., 968.

decomposition of, in closed vessels; composition of the gases formed (SARRAU and VIEILLE), 1879, A., 991; 1880, A., 780; 1881, A., 483.

for blasting, especially nitroglycerol (NIEDERSTADT), 1880, A., 595.

**Exsiccator** for drying in rarefied air without the use of the air-pump (GAWALOWSKI), 1875, 39.

See also Drying apparatus.

**Extract-red**, reaction for distinguishing alizarin from (WAGNER), 1876, ii., 328.

**Extracts**, testing of, for tin and copper (HAGER), 1874, 710.

animal, detection of mercury in (MAYENÇON and BERGERET), 1874, 602.

vegetable, new process for the preparation of, without heat (HERRERA), 1877, ii., 949.

**Eye**, physiological and pathological chemistry of the (CAHN), 1882, A., 759.

behaviour of the albumin of the refracting media of the (DOGIEL), 1879, A., 834.

influence of the, on tissue change in the animal body (v. PLATEN), 1876, i., 722; (PFLÜGER), 1876, ii., 107.

action of dehydrating agents on the crystalline lens of the (HEUBEL), 1880, A., 333.

## F.

**Fabrics**, vegetable, process for bleaching (BEYRICH), 1879, A., 761.

*Fagus sylvatica*. See Beech.

**Fahlöre**. See Tetrahedrite.

**Fairfieldite** (BRUSH and DANA), 1879, A., 892; 1881, A., 229.

**Fairy-rings**, occurrence of (GILBERT), 1876, i., 433.

**Fallowing** (WOLLNY), 1880, A., 736.

**Famatinite** (FRENZEL), 1874, 1143; 1876, i., 51.

**Faraday lecture** (v. HOFMANN), 1875, 1065; (WURTZ), 1879, T., 1; (v. HELMHOLTZ), 1881, T., 277.

**Farm** without stable manure, thirty-eighth year of a (STECHEK), 1880, A., 741.

**Faroeelite** (*mesole*) from Puy-de-Dôme (GONNARD), 1877, ii., 283.

**Fassaite** (v. ZEPHAROVICH), 1879, A., 364.

from Malgola in the Travignolo Thal (DOELTER), 1878, A., 391.

from the southern slope of Ricoletta (DOELTER), 1876, i., 887.

composition of (DOELTER), 1878, A., 390.

**Fassaite pyroxene** from Santorin lava (FOUQUÉ), 1875, 624.

**Fat**, formation of, in the organism (WEISKE and WILDT), 1874, 994; 1875, 173; (PEREWOZNIKOFF), 1878, A., 238; (SOXHLET), 1882, A., 238; (SCHULZE), 1882, A., 878.

formation of, in growth of Fungi (v. NÄGELI and LOEW), 1880, A., 337.

amount of, in ergot of rye (FICINUS), 1874, 177.

amount of, in commercial gluten (RITTHAUSEN), 1878, A., 239.

extraction of, from bones by light petroleum (THIEL), 1882, A., 123.

human, chemical composition of, at different ages (LANGER), 1882, A., 240.

of animals, influence of food on the composition of (MÜNTZ), 1881, A., 752.

situation of the deposit of, in animals on different diets (FORSTER), 1877, ii., 791.

results of feeding with flesh and (v. PETTENKOFER and v. VOIT), 1873, 1047.

decomposition of, can be increased by reflex action (v. VOIT), 1879, A., 76.

function and decomposition of, taken in food in the blood (RÖHRIG), 1876, i., 948.

influence of the addition of, to food, on its digestibility (HOFMEISTER), 1874, 83.

some peculiar modifications of animal, the result of fermentation and digestion of the neutral fats of food prior to and during assimilation (BARTLETT), 1877, ii., 207.

table of the absorption of, in the human intestinal canal (RUBNER), 1880, A., 564.

function of, in germination (LADUREAU), 1881, A., 59; 1882, A., 883.

apparatus for the estimation of (SIMON), 1874, 293.

estimation of, in butter. See Butter under Agricultural Chemistry.

vegetable, analysis of (REINITZER), 1882, A., 886.

**Fat**, estimation of, in fodder (WAGNER), 1880, A., 762.

estimation of, in feeding-stuffs (SIEMERT), 1879, A., 558.

estimation of, in milk. See Milk under Agricultural Chemistry.

estimation of, in yeast (v. NÄGELI), 1878, A., 913.

**Fats**, co-efficients of expansion of (WIGNER), 1880, A., 70.

determination of the melting and solidifying points of (RÜDORFF), 1873, 237.

specific gravities of (HAGER), 1880, A., 70.

specific gravities of, at high temperatures (WIGNER), 1877, ii., 108.

saponification of (v. DER BECKE), 1880, A., 762; (ANON.), 1881, A., 210; 1882, A., 123.

by sulphuric acid (FREMY), 1878, A., 922.

neutral, saponification of, in autoclaves (NITSCHIE), 1876, ii., 451.

acids obtained by distilling the crude acids derived from the saponification of, in a current of superheated steam (CAHOURS and DEMARÇAY), 1879, A., 1036; 1880, A., 540.

amount of glycerol liberated on the saponification of (v. DER BECKE), 1880, A., 762.

decomposition of neutral (BOCK), 1875, 1178.

vegetable, presence of free fatty acids in (ANON.), 1882, A., 421.

vegetable and animal, proportion of free fatty acids in (v. RECHENBERG), 1882, A., 239.

analysis of (REICHARDT), 1877, ii., 517.

animal and vegetable, estimation of free acids in (STOIMANN), 1882, A., 429.

estimation of, in mixtures of fatty acids (HAUSAMANN), 1881, A., 762; (GRÖGER), 1882, A., 1236.

estimation of, in palm oils and autoclaved materials (SEAR), 1882, A., 342.

separation of, from resin (GLADDING), 1882, A., 663.

separation of, from soaps (WOLFF), 1880, A., 587.

See also Oils and Tallow.

**Fatty acids**. See Acids.

**Fatty alcohols**. See Alcohols.

**Fatty oils**. See Oils.

**Fatty series**, molecular changes in the (DEMOLE), 1876, ii., 396.

**Fatty series**, brominated compounds of, action of nitric acid on (KACHLER), 1882, A., 36.

nitro-compounds of the (MEYER and CHOJNACKI; MEYER and RILLIER), 1873, 261; (MEYER and WURSTER), 1873, 611; 1874, 146; (MEYER), 1874, 365; 1875, 557.

constitution of the (KISSEL), 1882, A., 935.

action of acids on (MEYER and LOCHER), 1876, i., 903.

substitution in the (MEYER and TCHERNIAC), 1874, 982; (TCHERNIAC), 1874, 1151.

nitroso-compounds of (MEYER and ZÜBLIN), 1878, A., 487, 659.

**Fayalite**, sections of (DUDLEY and CLARKE), 1881, A., 991.

**Fayalite slags** from the Freiberg furnaces, containing zinc spinel (STELZNER), 1882, A., 476.

**Feathers**, dyeing of (REIMANN), 1873, 1069.

half-dyed (ANON.), 1874, 1193.

red colouring of (PUSCHER), 1873, 423.

and hair, black colouring matter contained in (HODGKINSON and SORBY), 1877, i., 427.

**Feculometer** for testing potato starch (CLOEZ), 1874, 1015; (BONDONNEAU), 1875, 385.

**Feeding and feeding stuffs**. See under Agricultural Chemistry.

**Fehling's solution** and its application (STEINER), 1879, A., 1066.

standardising of (ARNOLD), 1881, A., 942.

influence of albuminoid matters and their products of alteration on the reduction of (BÉCHAMP), 1876, i., 762.

action of gluconic, saccharic, lactic and mucic acids on (KILIANI), 1882, A., 429.

action of, on cane sugar, and on mixtures of cane- and grape-sugar (SCHEIBLER), 1873, 193.

titration of, with dextrose and sodium chloride (SCHEIBLER), 1873, 265.

reducing power of grape-sugar for (DEGENER), 1882, A., 104.

decomposition of; titration of glucose in presence of cane-sugar (CHAMPION and PELLET), 1875, 666.

reduction of, by milk-sugar (RODEWALD and TOLLENS), 1879, A., 217.

action of crystallisable sugar on (FELTZ), 1873, 296.



- Fehling's solution** for the estimation of sugars (Possoz), 1873, 410.  
 relation of various sugars to (SOXHLET), 1878, A., 686; 1880, A., 66; 1881, A., 887.  
 as a qualitative reagent for sugar (WORM-MÜLLER and HAGEN), 1881, A., 851.  
 action of, on hydroxylamine (DONATH), 1877, ii., 406.  
 action of organic matter, not sugar, in cane and beet products on (TUCKER), 1881, A., 1177.  
 influence of boiling distilled water on (BOIVIN and LOISEAU), 1875, 482.
- Felspar-basalts** (OEBBEKE), 1882, A., 1037.
- Felspars**, artificial production of (FOUQUÉ and MICHEL-LÉVY), 1879, A., 358; 1880, A., 449.  
 composition of (PETERSEN), 1873, 733; (COSSA), 1881, A., 537.  
 composition and determination of the fusibility of three Bavarian (BISCHOF), 1877, i., 446.  
 some peculiarities in the microscopical structure of (RUTLEY), 1876, ii., 54.  
 solvent action of gypsum on (COSSA), 1873, 1202.  
 action of sodium hydroxide and carbonate on (FLIGHT), 1882, T., 159.  
 pseudomorphous formation after (v. DRASCHE), 1874, 548.  
 pseudomorphs of, of the Wilhelms-leite (DALMER), 1878, A., 948.  
 from Bamle, in Norway (HAWES), 1874, 1071.  
 from the rhombic porphyry of Christianitya (MÜGGE), 1881, A., 1019; 1882, A., 22.  
 from the valley of Bagnères-de-Luchon (FILHOL), 1881, A., 692.  
 corundiferous, of Biella, in Piedmont (COSSA), 1881, A., 384.  
 metamorphosed from Čkyn in Bohemia (v. ZEPHAROVICH), 1875, 545.  
 in the basalt from the Hohen Hagen near Göttingen (KLEIN), 1880, A., 614.  
 recently found in the Odenwald, with a determination of its fusibility and the law relating thereto (BISCHOF), 1876, i., 527.  
 from the Val di Madonna, near the Val Floriana (DOELTER), 1876, i., 889.  
 accompanying microlite in Amelia Co., Virginia (SLOAN), 1882, A., 23.  
 two calcio-sodium, from the Ural (VOM RATH), 1873, 249.
- Felspars**, triclinic (JANOVSKY), 1874, 136, 237; (PETERSEN), 1874, 877; (HAUTEFEUILLE), 1878, A., 205.  
 constitution of (DES CLOIZEAUX; VOM RATH), 1875, 741.  
 microscopical examination of (DES CLOIZEAUX), 1876, ii., 611.  
 See also Albite, Anorthite, Labradorite, Microcline, Oligoclase, Orthoclase, and Petalite.
- Felspathic substance**, artificial production of (FRIEDEL and SARASIN), 1881, A., 383.
- Felt**, manufacture of, from fur of rabbits and hares (DELPECH), 1874, 99.  
 dyeing of, with aniline colours (ANON.), 1873, 1176.
- Fen lands**, manuring of, with kainite (MÄRCKER), 1882, A., 771.
- "Fer Bravais"** (MAGNIER DE LA SOURCE), 1880, A., 792.
- Fergusonite** (SMITH), 1877, ii., 715; 1882, A., 151; (SHEPARD), 1881, A., 382.
- Ferments** (BÉCHAMP), 1873, 404; (FITZ), 1878, A., 242.  
 chemical and physiological (MÜNTZ), 1875, 1208.  
 generation of (FREMY; PASTEUR), 1873, 82.  
 action of (TRAUBE), 1874, 486.  
 influence of salicylic acid and other antiseptics on (SCHÄR), 1876, i., 99.  
 influence of certain substances on (DETMER), 1882, A., 881.  
 produced by the morbid growth of the bioplasm of the yolk of egg (THOMSON), 1879, A., 478.  
 in beet sap (CIENKOWSKI), 1880, A., 334.  
 presence of, in germinating maize, and in the stalk of the plant (MARCANO), 1882, A., 1311.  
 supposed action of hops as a (PASTEUR), 1877, ii., 352.  
 properties of hops as, in bread-making, in the United States (SACC), 1876, i., 811; 1877, i., 240.
- Ferments, alcoholic**, in the air (MIQUEL), 1879, A., 394.  
 nature of (COCHIN), 1881, A., 928.  
 physiology and morphology of (HANSEN), 1882, A., 80.  
 intracellular generation of (FREMY), 1876, ii., 542.  
 diffusion of the germs of (PASTEUR), 1876, ii., 541.  
 behaviour of, in an atmosphere free from oxygen (BREFELD), 1875, 185.  
 soluble, non-existence of (COCHIN), 1879, A., 1046.

**Ferments**, anaërobic, conditions of life of (NENCKI), 1879, A., 954.  
 animal, action of thymol on (PESCHECHONOFF), 1874, 997.  
 butyric (*Bacillus amylobacter*) in the Carboniferous period (VAN TIEGHEM), 1880, A., 334.  
 butyric or lactic, presence of, in yeast (BROWN), 1873, 975.  
*Eurotium oryzae*, use of, in Japan (LIEBSCHER), 1882, A., 247.  
 nitric. See under Agricultural Chemistry.  
 organised, experiments showing that the poisonous properties of putrefied blood arises from (FELTZ), 1877, ii., 506.  
 unorganised. See Enzymes.  
 of sour wine, action of, on good wine (MACAGNO), 1879, A., 817.  
 See also *Bacillus*, *Bacterium*, *Enzymes*, *Fermentation*, *Microbes*, *Micrococcus* and *Saccharomyces*.

**Fermentation** (PASTEUR), 1873, 83, 294; 1878, A., 995; (FREMY), 1873, 83, 294; (BÉCHAMP; BÉCHAMP and ESTOR; TRÉCUL; GAUDIN), 1873, 294; (HOFFMANN), 1874, 1004; (MACAGNO), 1875, 185; (SCHUMANN), 1875, 662; (BERTHELOT), 1878, A., 995; (SCHIEL), 1879, A., 663; (ANON.), 1881, A., 928.  
 history of (v. STRUVE), 1875, 284.  
 causes of (BASTIAN), 1874, 85.  
 quick, apparatus for (HAMMER), 1880, A., 518.  
 new method of (DELBRÜCK and HEINZELMANN), 1881, A., 126.  
 in presence of organic salts (MAYER), 1881, A., 836.  
 processes of, and their relation to the life of the organism (HOPPE-SEYLER), 1876, i., 951.  
 influence of physico-chemical forces on the phenomena of (BASTIAN), 1876, ii., 542.  
 influence of air on (HANSEN), 1880, A., 819.  
 influence of compressed air on (BERT), 1876, i., 93.  
 and putrefaction, action of borax on (SCHNETZLER), 1875, 1286; 1876, i., 104, 990; (BEDOIN), 1876, ii., 543; (DE CYON; LE BOY), 1880, A., 415.  
 influence of gases on (NASSE), 1878, A., 90.  
 influence of glycerol on the processes of (PLÓSZ; MUNK), 1878, A., 526.

**Fermentation**, influence of oxygen on (MORITZ), 1874, 599; (MAYER), 1874, 913; 1880, A., 908; 1881, A., 479; (BÉCHAMP), 1879, A., 735.  
 power of salicylic acid to arrest. See under Salicylic acid.  
 arrest of, by salicylic and other aromatic acids (v. MEYER and KOLBE), 1876, i., 101.  
 retardation of, by certain substances (MÄRCKER), 1882, A., 80.  
 action of thymol on (PESCHECHONOFF), 1874, 997; (HUSEMANN), 1876, i., 990.  
 amount of yeast formed during (DELBRÜCK), 1880, A., 728.  
 accompanied by formation of hydrogen sulphide (MIQUEL), 1880, A., 132.  
 influence of, on the nitrogenous constituents of potato mash (BEHREND and MORGEN), 1880, A., 357, 819; (DELBRÜCK), 1880, A., 728.  
 products of, in the refuse of Paris (MAUMENÉ), 1877, ii., 915.  
 of albumin (FITZ), 1879, A., 664.  
 of beer (MÜLLER and HAUER), 1878, A., 913; 1879, A., 1079.  
 of beet-root sap obtained by diffusion (MILLOT and MAQUENNE), 1880, A., 519, 931.  
 of calcium glycerate, lactate, malate, and tartrate, and of erythritol (FITZ), 1879, A., 664.  
 of Norwegian fish-guano and bone-meal (PAGEL), 1878, A., 163.  
 of fruit (PASTEUR), 1873, 293; (LECHARTIER and BELLAMY), 1873, 293; 1876, i., 738.  
 and the diffusion of the germs of alcoholic ferments (PASTEUR), 1876, ii., 541.  
 plunged into carbonic anhydride (JOUBERT and CHAMBERLAND), 1877, i., 106.  
 action of antiseptic and toxic vapours on the (LECHARTIER and BELLAMY), 1877, ii., 507; (GAYON), 1877, ii., 508.  
 of gelatin (FITZ), 1879, A., 664.  
 of glucose (BOUTROUX; MAUMENÉ), 1880, A., 863.  
 of glycerol. See Glycerol.  
 of hydroxyvaleric acid (GLACOSA), 1879, A., 782.  
 surface, of potato mash (DELBRÜCK), 1880, A., 518.  
 of molasses (FIEDLER), 1880, A., 931; (NEALE), 1881, A., 770.  
 of must (GRASSI), 1875, 792; (BLANKENHORN and DAHLEN), 1879, A., 993.

**Fermentation** of must, influence of a high temperature on the (GRASSI), 1875, 492.  
 of *n*-valeric acid (FITZ), 1881, A., 798.  
 of water plants (BÖHM), 1875, 1285.  
 of urine. See under Urine.  
 acetic, origin of (v. KNIERIEM and MAYER), 1874, 178.  
   influence of boric acid on (HERZEN), 1880, A., 819.  
 acetic and alcoholic, of the fruits, flowers and leaves of certain plants (DE LUCA), 1876, ii., 649.  
 spontaneous acetic and alcoholic, in the liver (BÉCHAMP), 1873, 399.  
 alcoholic (DUMAS), 1873, 80; (MAYER), 1874, 177; (BREFELD), 1874, 707; (MOHR), 1875, 284; (FITZ), 1877, i., 226; (SCHÜTZENBERGER and DESTREM), 1879, A., 550; (BERTHELOT), 1880, A., 276; (COCHIN), 1880, A., 277; (BOUSSINGAULT), 1881, A., 652.  
   by beer yeast, physiological theory of (BÉCHAMP), 1873, 405.  
   by means of *Mucor Mucedo* (FITZ), 1873, 650.  
   produced by *Mucor racemosus* (FITZ), 1876, i., 739.  
   evolution of heat during (v. RECHENBERG), 1881, A., 11.  
   influence of reduced atmospheric pressure on (BROWN), 1873, 973.  
   apparent occurrence of trimethylcarbinol as a product of (FREUND), 1876, i., 543.  
   of milk (MUSSO), 1881, A., 944.  
 butyric (PASCHUTIN), 1874, 279; (SCHÜTZENBERGER), 1875, 910; 1876, i., 99; (BÖHM), 1878, A., 162.  
 cellulosic, of cane sugar (DURIN), 1876, ii., 540.  
   produced by vegetable organs (DURIN), 1877, i., 106.  
 frothy (BAUER), 1880, A., 518.  
 fungoid (FITZ), 1879, A., 172.  
 lactic (BOUTROUX), 1878, A., 566; (RICHER), 1878, A., 567; 1879, A., 663; (CAZENEUVE), 1880, A., 513; 1881, A., 928.  
 marsh gas (POPOFF), 1875, 1209.  
 putrid, of proteid substances, mechanism of (GAUTIER and ETARD), 1882, A., 1115.  
 schizomycetic (FITZ), 1877, i., 226; ii., 214; 1878, A., 241; 1879, A., 664; 1880, A., 819; 1882, A., 1121.  
 succinic (MIQUEL), 1879, A., 394.  
 viscous (BAUDRIMONT), 1875, 1285.

**Fermentation.** See also Ferments, Microbes, Microzymes, Moulds, Saccharomycetes, Yeast, and, under Agricultural Chemistry.

**Ferrates**, nitrosothio- (ROSENBERG), 1880, A., 9.

*Ferri et quinae citras*, B.P. estimation of quinine in (PALMER), 1876, ii., 664; (PRESCOTT), 1877, ii., 933; (STEVENSON), 1879, A., 405.

**Ferric and ferrous compounds.** See under Iron.

**Ferricyanic acid** (*hydroferricyanic acid*) (JOANNIS), 1882, A., 790.

**Ferricyanides** (BONG), 1876, i., 907; (SCHULER), 1879, A., 702.

  action of, on metallic silver (EDER), 1878, A., 35.

**Ferrochrome** (BOUSSINGAULT), 1878, A., 772; 1879, A., 286.

**Ferrocyanic acid** (*hydroferrocyanic acid*), heat of formation of (JOANNIS), 1882, A., 790.

**Ferrocyanides** (BONG), 1876, i., 908; (ATTERBERG), 1876, ii., 508; 1877, i., 298; (WYRUBOFF), 1877, i., 190.

  metallic, law peculiar to (GUYARD), 1879, A., 830.

  heat of formation of (JOANNIS), 1882, A., 791.

  and ferricyanides of amines (FISCHER), 1878, A., 407; (WURSTER and ROSER), 1880, A., 98; (EISENBERG), 1880, A., 231; 1881, A., 261.

**Ferromanganese**, manufacture of (JORDAN), 1878, A., 772; 1879, A., 755.

  preparatory treatment of manganese ores for the production of, in the blast furnace (LEDEBUR), 1882, A., 1144.

  fused spiegeleisen instead of, in the Bessemer-process (RAYMOND), 1876, i., 453.

  used in puddling fine-grained iron (ANON.), 1882, A., 344.

  estimation of manganese in (KERN), 1876, i., 110; 1877, ii., 647; (PATTINSON), 1879, T., 371.

  alloys, distribution of manganese in (KERN), 1879, A., 286.

  ores, separation of iron and manganese in (FUMARO), 1877, ii., 805.

  See also Iron.

**Ferrosilicon**, a remarkable specimen of (SMITH), 1879, A., 204.

  use of, in castings (BIERMANN), 1882, A., 118.

*Ferrum reductum.* See under Iron

- Fertilisers and fertility.** See under Agricultural Chemistry.
- Ferulic acid** (*p*-hydroxy-*m*-methoxycinnamic acid) (TIEMANN and NAGAI), 1878, A., 579.  
 synthesis of (TIEMANN), 1876, i., 711.
- isoFerulic acid** (*hesperetic acid*) (TIEMANN and NAGAI), 1878, A. 580; 1881, A., 740.
- Fever**, theory of (COLASANTI), 1877, i., 328.
- Fibres** from various plants (MOELLER), 1879, A., 859.  
 animal and vegetable, behaviour of, during the carbonisation of wool and cloth (WIESNER), 1876, ii., 563.  
 detection by chemical means of various, in threads and stuffs (PINCHON), 1876, ii., 118.  
 woody, phloroglucinol as a test for (WIESNER), 1878, A., 612.
- Fibrin**, coagulation of (SCHMIDT), 1873, 180; 1876, i., 945; 1877, i., 102, 483, 726; (HAMMARSTEN), 1877, i., 726.  
 relation of the coagulation of, to the corpuscular elements of the blood (SCHMIDT), 1875, 175; 1876, i., 945.  
 digestion of, without pepsin (WOLFF-HÜGEL), 1873, 761.  
 production of a substance analogous to common albumin by the breaking up of (GAUTIER), 1874, 1175.  
 estimation of (HENNEBERG), 1879, A., 835.
- Fibrin-ferment**, preparation of (HAMMARSTEN), 1879, A., 474.  
 derivation of the (SCHMIDT) 1876, i., 945.
- Fibrinogen**, preparation of (HAMMARSTEN), 1877, i., 727; 1880, A., 172.  
 See also Proteids.
- Fibrin-pancreas digestion**, formation of cinnamaldehyde during (OSSIKOWSKY), 1880, A., 469.
- Fibrin-peptone.** See Peptone.
- Fibroin** and raw-silk, constitution of (SCHÜTZENBERGER and BOURGEOIS), 1876, i., 719.
- Fibrolite** as a transformation-product of corundum (GENTH), 1874, 1068.
- Fichtelite** and retinite in the peat moors of the Fichtelgebirge (SCHMIDT), 1876, i., 350.
- Ficus elastica*, examination of (SACC), 1882, A., 989.
- Ficus gummiiflua*, wax of (KESSEL), 1879, A., 261.
- Field experiments.** See under Agricultural Chemistry.
- Fig-tree**, a digestive ferment of the juice of the (BOUCHUR), 1880, A., 728.
- Filix mas*, composition of the roots of (KRUSE), 1877, i., 336.
- Fillowite** (BRUSH and DANA), 1881, A., 229.
- Films**, liquid, supposed action of, on supersaturated solutions (GERNEZ), 1873, 720.
- Filter-paper** and filtering (KRAUT), 1880, A., 573.  
 the behaviour of metallic solutions with (BAYLEY), 1878, T., 304.  
 acceleration of coagulation by (SCHMIDT), 1873, 186.  
 comparative analysis of (GAWALOWSKI), 1877, ii., 217.
- Filter-pump**, improved forms of (THORPE), 1873, 132; (FOOTE), 1874, 950.
- Filters**, carbon, value of, in purifying drinking waters (MÜLLER), 1873, 302, 1268.  
 experiments with animal charcoal, silicated carbon, and spongy iron (FRANÇOIS DE CHAUMONT), 1879, A., 986.  
 silicated carbon and spongy iron (WIGNER), 1879, A., 493.  
 porous (WANKLYN), 1873, 952.
- Filtration** (GROSJEAN), 1879, T., 344.  
 new method of (COOKE), 1873, 1158.  
 simple suction arrangement for rapid (HOLTHOF), 1877, ii., 508.  
 intermittent, through sand, influence of, on animal and vegetable matters dissolved in water (HATTON), 1881, T., 259.  
 siphon apparatus for (DAHLEN), 1873, 526.  
 for the separation of ether, etc. (WARDEN), 1882, A., 771.  
 use of compressed air in (v. LEUBE), 1877, i., 270.  
 with the air-pump, arrangement for accelerating (HEMPEL), 1876, ii., 553.  
 under pressure (GAWALOWSKI), 1875, 39.  
 at high temperatures (HORVATH), 1874, 432.
- Fiorite** (ROSTER), 1878, A., 282.
- Fir.** See under Agricultural Chemistry.
- Fir-wood**, constitution of (BENTE), 1876, i., 421.
- Fire-analysis** (ROSS), 1873, 537.
- Fireblende.** See Rittingerite and Pyrostilpnite.
- Fire-clays.** See under Clays.
- Fire-damp** in collieries (WINKLER), 1879, A., 760.



- Fire-damp**, limits between which it can explode (COQUILLION), 1877, i., 166.  
 detection of (SMITH), 1879, A., 991.
- Fires**, preparation of some coloured, used in pyrotechny (KERN), 1877, i., 235.
- Fireworks**, signal mixtures for (ANON.), 1873, 1068.
- Fiscic acid** (PATERNO), 1882, A., 1083.
- Fisetin** (KOCH), 1873, 72.
- Fish**, relation of the number of, to the lime present in waters (WEITH), 1881, A., 630.  
 some liquids of the organisms of (RABUTEAU and PAPILLON), 1873, 1150.  
 respiration of (QUINQUAUD), 1873, 929.  
 injury to, by waste liquids (WEIGELT), 1880, A., 490.
- Fistula**, lymphatic, analysis of supposed chyle from (HENSEN), 1875, 902.
- Flames**, constant normal (WARTHA), 1874, 432.  
 properties of (NEYRENEUF), 1882, A., 568.  
 some remarkable phenomena with (HOLTZ), 1881, A., 489.  
 cause of the luminosity of (STEIN), 1874, 866.  
 cause of the luminosity and non-luminosity of (WIBEL), 1875, 603.  
 optical properties of (HIRN), 1874, 526.  
 transparency of, for rays it does and does not emit (GOUY), 1878, A., 630.  
 thermal absorption and emission of (ROSSETTI), 1880, A., 206.  
 action of electricity on (NEYRENEUF), 1873, 839, 1093; 1875, 39.  
 electrical resistance of (HOPPE), 1878, A., 2.  
 action of, on electrified bodies (DOULIOT), 1876, i., 510.  
 temperature of various (ROSETTI), 1878, A., 262, 467, 694.  
 distance between burner and (HEUMANN), 1876, i., 36.  
 of compressed gases (BENEVIDES), 1873, 590.  
 charged with saline dust, character of (GOUY), 1877, ii., 817.  
 containing iodine, formation of iodic acid in (SALET), 1875, 608.  
 Bessemer, spectrum of (WATTS), 1873, 461.  
 of the Bunsen burner, non-luminous (BLOCHMANN), 1874, 17.
- Flames** of the Bunsen burner, action of the air in rendering it non-luminous (HEUMANN), 1881, A., 773; 1882, A., 129; (BLOCHMANN), 1882, A., 129.  
 luminosity of, induced by heating the tube (BLOCHMANN), 1882, A., 256.  
 blue, from common salt (SMITH), 1879, A., 497.  
 coloured, photometric researches on (GOUY), 1877, ii., 817.  
 transparency of (GOUY), 1878, A., 629.  
 gas, extinction of the luminosity of, by the admixture of another gas in place of air (BLOCHMANN), 1874, 18.  
 regulation of, for temperatures above the boiling point of mercury (MYERS), 1873, 129.  
 formation of sulphates by (PRIWOZNIK), 1875, 130.  
 temperature-regulator for gas and lamps (MARTENSON), 1873, 471.  
 theory of luminous (HEUMANN), 1875, 1149; 1876, ii., 377; 1877, i., 43, 265; ii., 106.  
 new sonorous (DECHARME), 1876, i., 35.
- "Flashing"** in assays of gold (VAN RIEMSDIJK), 1880, A., 693; 1881, A., 769.
- Flasks** which have contained resin solutions or essential oils, cleansing of (ANON.), 1873, 1276.
- Flavaniline** (*p-amido-2'-phenyl-4'-methylquinoline*), and its derivatives (FISCHER and RUDOLPH), 1882, A., 1066.
- "Flavescin,"** a new indicator (LUX), 1881, A., 193.
- Flavin**. See Benzophenone, *β* diamido-.
- "Flavin"** (OTT), 1873, 643, 959.
- Flavoline** (*2'-phenyl-4'-methylquinoline*) (FISCHER and RUDOLPH), 1882, A., 1067.
- Flavopurpurin** (*1:2:3'-trihydroxyanthraquinone*) (SCHUNCK and ROEMER), 1876, ii., 299; 1878, A., 985; (V. PERGER), 1879, A., 255; (ROSENSTIEHL), 1879, A., 384.  
 anthrapurpurin and isopurpurin, actual relations of (MORTON), 1879, A., 943.  
 detection of (SCHUNCK and ROEMER), 1880, A., 424.  
 tribromo- (SCHUNCK and ROEMER), 1878, A., 322.
- Flax** and cotton, action of alkalis on (JEANMAIRE), 1874, 931.  
 See also under Agricultural Chemistry.

**Fleims**, eruptive formation of, with some remarks on formations of the older volcanoes (DOELTER), 1878, A., 480.

**Flesh and fat**, results of feeding with (v. PETTENKOFER and v. VOIT), 1873, 1047.

**Fleshmeal**. See under Agricultural Chemistry.

**Flint** (RICCIARDI), 1881, A., 1003. and agates, certain alterations of (FRIEDEL), 1876, i., 526.

**Flooring slabs** (ANON.), 1877, i., 760.

**Floorwax**, preparation of (NESSLER), 1873, 307.

**Flour**, mill-dust and a coloured Alga present in (JEGEL), 1878, A., 922.

paste, colouring matter in (LECOQ DE BOISBAUDRAN), 1882, A., 739.

See also under Agricultural Chemistry.

**Flour-mills**, explosions in (ANON.), 1873, 420.

at Minneapolis, Minnesota, explosion in (PECKHAM), 1879, A., 1079.

prevention of spontaneous combustion in (KÜHL), 1873, 660.

**Flowers**, amounts of sugar contained in the nectar of various (WILSON), 1878, A., 997.

saccharine matter contained in the petals of (BOUSSINGAULT), 1877, i., 452.

colouring and drying of natural (PUSCHER), 1873, 307.

**Fluavil** (NAYLOR), 1882, A., 307.

**Flue**; incrustation in an old (HARVEY), 1876, i., 796.

**Flue-dust** from furnaces, composition of (BRITTON), 1878, A., 354.

**Fluellite**, composition of (BRANDL), 1882, A., 1176.

**Fluid-cavities** (HARTLEY), 1877, i., 241.

**Fluids**, digestive (ELLENBERGER and HOFMEISTER), 1882, A., 1119.

See also Liquids.

**Fluoboracetones**,  $\alpha$ - and  $\beta$ - (LANDOLPH), 1878, A., 774; 1879, A., 914.

"**Fluoborethylene**" (LANDOLPH), 1878, A., 483, 774; 1879, A., 915; (COUNCLER), 1880, A., 230.

**Fluoboric acid**. See under Fluorine.

**Fluoran** (*phenolphthalein anhydride*) (v. BAEYER), 1882, A., 1096.

**3-Fluoranic acid** (PATERNO and OLIVIERI), 1882, A., 615.

**Fluoranthene** (*idryl*) and its derivatives (GOLDSCHMIEDT), 1878, A., 155; 1881, A., 283; (FITTIG and GEBHARD), 1878, A., 431; 1879, A., 165; (ATTERBERG), 1878, A., 889; (FITTIG and LIEPMANN), 1880, A., 400.

constitution of (FITTIG and LIEPMANN), 1879, A., 536.

*dibromo-* and *trinitro-* (FITTIG and GEBHARD), 1878, A., 431; 1879, A., 166.

*dibromo-* (GOLDSCHMIEDT), 1878, A., 155.

*tribromo-*, and *trichloro-* (GOLDSCHMIEDT), 1881, A., 283.

**Fluoranthene-carboxylic acid** (*idryl-carboxylic acid*) and **fluoranthenedisulphonic acid** and its salts (GOLDSCHMIEDT), 1881, A., 284.

**Fluoranthene-picric acid** (FITTIG and GEBHARD), 1879, A., 166.

**Fluoranthenequinone** (GOLDSCHMIEDT), 1878, A., 155; (FITTIG and GEBHARD), 1879, A., 166.

**Fluorene** ( $\alpha$ -*diphenylenemethane*) (FITTIG), 1873, 755; (BARBIER), 1873, 1226; 1875, 456; 1876, ii., 77; 1877, i., 70; (FITTIG and GEBHARD), 1878, A., 432; 1879, A., 166; (BARTH and GOLDSCHMIEDT), 1878, A., 734; (ATTERBERG), 1878, A., 889; (FITTIG and SCHMITZ), 1879, A., 164; (CARNELLEY), 1880, T., 715.

attempts to produce (BARBIER), 1875, 254.

preparation of, from diphenylene ketone (FITTIG), 1873, 755.

preparation of, from fluorenic acid (FITTIG and LIEPMANN), 1880, A., 400.

action of heated lead oxide on (DE LA HARPE and VAN DORP), 1876, i., 242.

detection of small quantities of, in presence of phenanthrene and anthracene (ANSCHÜTZ), 1878, A., 985. *diamido-* (SCHULTZ), 1879, A., 653; 1880, A., 814.

$\alpha$ -*dibromo-* (BARBIER), 1873, 1226; 1877, i., 70.

$\beta$ -*dibromo-*, and *dinitro-* (FITTIG and SCHMITZ), 1879, A., 164.

**Fluorene acetate**. See Acetyldiphenylenecarbinol.

alcohol (BARBIER), 1876, ii., 77; (FRIEDLÄNDER), 1877, ii., 493.

oxide (BARBIER), 1876, ii., 77.

picrate (FITTIG and SCHMITZ), 1879, A., 164.

- Fluorene-carboxylic acid** (*fluorenic acid*) and its salts (FITTIG and LIEPMANN), 1880, A., 401.
- Fluorescein**, and its derivatives (FISCHER), 1875, 159; (v. BAEYER), 1877, i., 195.  
 constitution of (v. BAEYER), 1882, A., 1096.  
 synthesis of (GUYARD), 1878, A., 797.  
 manufacture of (BINDSCHEDLER and BUSCH), 1879, A., 292.  
 nitroso-compounds of (GIRARD and PABST), 1879, A., 383.  
 as an indicator in titration (KRÜGER), 1877, i., 341.  
 reactions of (KNECHT), 1882, A., 968.  
 chloride, phthalini of (v. BAEYER), 1882, A., 1097.  
*tetrabromo-*. See Eosin under Colouring matters.  
*tetranitro-* (FISCHER), 1875, 159; (v. BAEYER), 1877, i., 200.
- Fluorescein-carboxylic acid**, and *di-* and *tetra-bromo-* (SCHREDER), 1879, A., 55.
- Fluorescence** (LUBARSCHE), 1875, 528; 1881, A., 70; (LOMMEL), 1877, i., 676; 1878, A., 358; (LAMANSKY), 1881, A., 214.  
 Stokes's law of (LAMANSKY; BECQUEREL), 1879, A., 862.  
 as a means of detecting adulteration (TICHBORNE), 1876, i., 118.  
 of the salts of the earth-metals (SORET), 1879, A., 862.  
 in the anthracene series (LIEBERMANN), 1880, A., 665.  
 of some solid hydrocarbons in coal-tar and petroleum residues (MORTON), 1873, 235, 590; 1874, 14.
- Fluorescent body in *Atropa Belladonna*** (FASSBENDER), 1877, i., 213.  
 bodies, behaviour of certain, in castor oil (HÖRNER), 1875, 120.  
 spectrum. See under Photochemistry.
- Fluorine**, crystallographic and chemical investigation of some minerals containing, from Greenland (v. NORDENSKIÖLD), 1876, ii., 384.  
 cerium phosphate containing (RADOMINSKI), 1874, 663.  
 occurrence and formation of (BRAUNER), 1882, A., 8; (LOEW), 1882, A., 459.  
 in fluor spar (LOEW), 1881, A., 785.  
 specific volume of (THORPE), 1880, T., 385.  
 affinity values of (MÜLLER-ERZBACH), 1882, A., 137.
- Fluorine**, compounds of, with uranium (DITTE), 1880, A., 853.  
 hydrofluoric acid (*hydrogen fluoride*), molecular weight of (MALLET), 1881, A., 973.  
 clear etching of glass with (ANON.), 1875, 1299.  
 arsenical (JEHN), 1873, 528.  
 compound of, with tellurous oxide (DITTE), 1876, ii., 607.  
 fluorides, use of, in the manufacture of glass (ANON.), 1874, 1185.  
 hydrofluoboric acids, two new (LANDOLPH), 1878, A., 576; 1880, A., 28.  
 fluoboric acid and its salts (v. BASAROFF), 1874, 1134.  
 ethylene derivative of (LANDOLPH), 1880, A., 28.  
 fluoxyboric acid (v. BASAROFF), 1874, 1056.  
 hydrofluosilicic acid, behaviour of cerium salts to (STOLBA), 1874, 1008.  
 crystallised (KESSLER), 1880, A., 789.  
 silicofluorides of the metals, affinity values of, as deduced from the law of smallest volumes (MÜLLER-ERZBACH), 1882, A., 1024.  
 fluoxyvanadates (BAKER), 1878, T., 389.
- Fluorine compounds, organic** (PATERNO), 1881, A., 597.  
 analyses of (LANDOLPH), 1880, A., 61.
- Fluorine**, estimation, volumetric, of (PENFIELD), 1879, A., 829.
- Fluorite**. See Fluorspar.
- p*-**Fluorobenzenesulphonic acid**, and its amide and chloride (LENZ), 1879, A., 649.
- Fluorobenzoic acids**, *o*-, *m*- and *p*-, and their salts (PATERNO), 1881, A., 597; (PATERNO and OLIVERI), 1882, A., 613.
- Fluoro-*p*-toluic acid** (PATERNO and OLIVERI), 1882, A., 614.
- Fluorspar** (*fluorite*) from the Cima d'Asta (DOELTER), 1876, i., 888.  
 from Greenland (KLIEN), 1879, A., 511.  
 occurrence of, in Saxony (FRENZEL), 1874, 1074.  
 triakis octahedrons of, from Striegau (v. LASAULX), 1875, 625.  
 artificial formation of (SCHEERER and DRECHSEL), 1874, 234.  
 pseudomorph of, after prosopite (GEINITZ), 1877, i., 700.  
 photo- and thermo-electricity of (HANKEL), 1878, A., 2; 1881, A., 215, 337.

- Fluorspar** (*fluorite*), free fluorine in (LOEW), 1881, A., 785.  
 fluid contained in a cavity in (MALLET), 1877, ii., 144.  
 etched figures on (BAUMHAUER), 1877, ii., 116.
- Flux**, uselessness of Turner's (CHAPMAN), 1877, ii., 216.
- Fly agaric** (*Agaricus albus*), alkaloids of the (HARNACK), 1877, ii., 197.
- Fodders**. See under Agricultural Chemistry.
- Fog**, dry (FRANKLAND), 1880, A., 439.  
 dust, and clouds. relations between (AITKEN), 1881, A., 970.
- Food**, absorption of (ANON.), 1880, A., 414.  
 passing through the human body, absorption of (RUENNER), 1880, A., 563; 1881, A., 1050.  
 some peculiar modifications of animal fats, the result of fermentation and digestion of the neutral fats of, prior to, and during assimilation (BARTLETT), 1877, ii., 207.  
 function and decomposition of fat taken in, in the blood (RÖHRIG), 1876, i., 948.  
 influence of, upon the assimilation of oxygen and excretion of carbon dioxide (SPECK), 1876, i., 723.  
 relations between work and the decomposition of, in the body (KELLNER), 1881, A., 114.  
 action of ozone on (BOILLOT), 1876, i., 724.  
 influence of, on oxidation (v. MERING and ZUNTZ), 1878, A., 520.  
 determination of the mechanical coefficient of (SANSON), 1873, 1249.  
 division of, into plastic and respiratory (v. VOIT), 1873, 286.  
 importance of the inorganic constituents of (FORSTER), 1874, 592.  
 presence of metallic compounds in (PAUL and KINGZETT), 1877, ii., 912.  
 copper in (DUPRÉ; MUTER; PIESSE), 1877, ii., 511; (GAUTIER), 1880, A., 490.  
 amount of iron in (BOUSSINGAULT), 1873, 288.  
*Canna edulis sterilis* as (CARRIÈRE), 1882, A., 990.  
 direct method for determining the calorific power of carbohydrate as (WANKLYN and COOPER), 1878, A., 1013.  
 of four miners at the Silberau Mine, Ems, composition of (STEINHEIL), 1878, A., 592.
- Food**, detection of adulterants in (HILGER), 1876, i., 766; ii., 329; 1877, ii., 232.  
 adulteration and examination of (FISCHER), 1880, A., 422.  
 amylaceous, comparative analyses of gluten biscuit and certain (BOUSSINGAULT), 1876, i., 765.  
 tinned, analysis of various (WIGNER), 1880, A., 594; 1881, A., 211.  
 See also under Agricultural Chemistry.
- Forage**. See Agricultural Chemistry.
- Force**, chemical. See Affinity.
- Forces**, dissymmetric natural (PASTEUR), 1874, 950.
- Forssite**. See Stilbite.
- Forest**. See under Agricultural Chemistry.
- Formaldehyde** (*methalddehyde*; *oxymethylene*) (TOLLENS), 1882, A., 1277.  
 preparation of (VOLHARD), 1875, 876; (v. HOFMANN), 1879, A., 219; (MICHAEL), 1881, A., 1123; (KABLUKOFF), 1882, A., 824.  
 synthesis of (BRODIE), 1874, 569.  
 compounds of, with aromatic hydrocarbons (v. BAEYER), 1873, 884.
- Paraformaldehyde** (*trioxymethylene*) (RENARD), 1880, A., 25; (MICHAEL), 1881, A., 1123.
- Formamide**, bromo- (v. HOFMANN), 1882, A., 1052.  
 substituted (WALLACH), 1881, A., 717.  
 thio- (v. HOFMANN), 1878, A., 396.
- Formamidine** (CLAISEN and MATTHEWS), 1882, T., 266.
- Formamidodiphenyl** (ZIMMERMANN), 1881, A., 176.
- Formamidoxime** (*isurctin*), a base isomerie with urea (LOSSEN and SCHIFFERDECKER), 1873, 629.  
 crystalline form of (KLEIN), 1873, 586.
- Formanilide**, *p*-bromo- and *p*-bromothio- (DENNSTEDT), 1880, A., 634.  
*o*-nitro- (HÜBNER), 1882, A., 181.  
 thio- (v. HOFMANN), 1877, ii., 604; 1878, A., 396; (BERNTSEN), 1878, A., 71, 790.  
 action of heat on (NICOL), 1882, A., 611, 958.
- Formic acid** in urine (THUDICHUM), 1877, ii., 504.  
 preparation of crystallisable (LORIN), 1874, 140; 1875, 1250; 1876, i., 560; ii., 59; (BERTHELOT), 1875, 749.



- Formic acid**, synthesis of (BRODIE), 1873, 744; (MERZ and TIBIRICA), 1878, A., 288; 1880, A., 374; (GEUTHER), 1880, A., 459; (LOEW), 1880, A., 460.  
 conversion of chloroformic acid into (GEUTHER), 1881, A., 248.  
 formation and decomposition of (THOMSEN), 1873, 240.  
 electrolysis of (BUNGE), 1877, ii., 311; 1881, A., 798; (RENARD), 1880, A., 27.  
 heat of combustion of (BERTHELOT), 1873, 1099.  
 vapour-density of (CALM), 1879, A., 579.  
 anhydrous and hydrated, vapour-density of (PETTERSSON and EKSTRAND), 1880, A., 868.  
 thermal and volumetric researches on (PETTERSSON), 1882, A., 3.  
 mutual displacement of acetic acid and (LESCŒUR), 1875, 1175.  
 reaction of, with *o*-amidophenol and tolylenediamine (LADENBURG), 1877, ii., 752.  
 action of rhodium, iridium and ruthenium on (SAINTE-CLAIRE DEVILLE and DEBRAY), 1874, 1076.  
 decomposition of, by zinc-dust (JAHN), 1880, A., 794; 1881, A., 141.  
 oxidation of, by ammoniacal cupric oxide (CAZENEUVE), 1880, A., 235.  
 volumetric estimation of (PORTES and RUYSSSEN), 1876, ii., 663.  
 separation of propionic acid from (LINNEMANN), 1874, 605.  
 cyano-, and *paracyano*-, and their salts and amides (WEDDIGE), 1875, 447.  
 thio-, potassium salt of (NICOL), 1882, A., 589.  
 thiocyno- and its derivatives (HENRY), 1875, 57.
- Formates**, specific gravity and volume-constitution of (SCHRÖDER), 1881, A., 496.  
 action of heat on (MERZ and WEITH), 1882, A., 1050.  
 metallic, decomposition of, in presence of water (RIBAN), 1882, A., 494; (BERTHELOT; MAUMENE), 1882, A., 496.  
 ammonium, decomposition of, by heat (ANDREASCH), 1879, A., 705.  
 barium and calcium, action of heat on (MERZ and WEITH), 1882, A., 1050.  
 calcium, dry distillation of (LIEBEN and PATERNO), 1874, 357.
- Formates**, calcium, production of methylic alcohol by the distillation of (FRIEDEL and DA SILVA), 1873, 1118.  
 lead, compound of, with lead acetate (PLOCHL), 1881, A., 86.  
 magnesium and potassium, action of heat on (MERZ and WEITH), 1882, A., 1050.  
 potassium, decomposition of, in carbonic acid, air and pure hydrogen (NAUDIN and DE MONTMOLON), 1877, i., 66.  
 rubidium and sodium, action of heat on (MERZ and WEITH), 1882, A., 1049.  
 sodium, action of, on benzoic acid (v. RICHTER), 1873, 1238.  
 action of, on sulphobenzoic and benzoic acids (MEYER), 1874, 478.  
 action of, on platinum and palladium (BÖTTGER), 1874, 1065.  
 action of, on potassium benzenedisulphonate (ARMSTRONG), 1874, 804.  
 compound of, with sodium acetate, crystallography of (FITZ), 1880, A., 799.  
 terbium (MARIIGNAC), 1879, A., 114.  
**Orthoformic acid** (GRIMAU), 1873, 371.  
 ethereal salts of (DEUTSCH), 1879, A., 453.
- Formins**, characteristics of the (LORIN), 1876, ii., 58.
- Formobenzoic acid**. See Phenylglyoxylic acid.
- Formoguanamine**. See Guanamine.
- Formo- $\beta$ -naphthalide** (COSINER), 1881, A., 605.
- Formonitrate**, barium derivative of (INGENHOES), 1880, A., 32.
- Formo-*o*-toluidide** (LADENBURG), 1877, ii., 754.
- Formulæ**, relations between affinity and dissected (WRIGHT), 1875, 228.  
 structural (VAN'T HOFF), 1875, 862.
- "Formylcarberin"** (GRIMAU), 1873, 371.
- Formylcarboxylic acid**. See Glyoxylic acid.
- Formyltricarboxylic acid**. See Methanetricarboxylic acid.
- Fortis**, vitrified, examination of the materials of (DAUBRÉE), 1881, A., 394, 703.
- Fossil eggs in guano**, composition of (CLARK), 1882, A., 1310.  
 plants from the Carboniferous strata of the Tarentaise (v. GÜMBEL), 1881, A., 390.

- Fossil resin.** See Resin.  
wood in Cleveland ironstone (STEAD), 1879, A., 91.
- Fossils**, Bohemian chalk (STOKLASA), 1881, A., 477.
- Fowls** poisoned with pumpkin seeds (HILLE), 1879, A., 1046.  
phosphorus poisoning in (FRAENKEL and RÖHMANN), 1882, A., 544.  
See also Chicken.
- Fowls' dung**, composition of (V. KNIE-RIEM), 1877, ii., 792; (PETERMANN), 1880, A., 345.
- Foxglove.** See *Digitalis purpurea*.
- Fractional distillation.** See Distillation.
- Fragarin** and **fragarianin** (PHIPSON), 1878, A., 982.
- Frangulin** and **frangulic acid** (FAUST), 1873, 503.
- Franklandite**, relative composition of ulexite and (HOW), 1877, ii., 174.
- Franklinite**, relation of, to the spinel-group (SEYMS), 1877, i., 701.
- Fraxinus americana*, bark of (BRADFORD), 1882, A., 1150.
- Fredricite**, a mineral resembling the fahlore from Falu (SJÖGREN), 1881, A., 998.
- Freezing** of spirits and wines (MELSENS), 1875, 489.
- Freezing agent**, use of methyl ether as a (TELLIER), 1875, 488.
- Freezing apparatus** (ARMENGAUD), 1873, 716.  
Carré's, easy production of very low temperatures by means of (LECOQ DE BOISBAUDRAN), 1875, 1235.
- Freezing mixtures** (BERTHELOT), 1874, 945; 1880, A., 687; (PFAUNDLER), 1876, i., 867; ii., 39; (DITTE), 1880, A., 602, 784.  
of calcium chloride and snow (HAMMERL), 1879, A., 689.  
of sulphuric acid and snow (WITZ), 1876, i., 867; (PFAUNDLER), 1876, i., 867.
- Freezing point** of mixtures of acetic acid and water (GRIMAU), 1873, 613.  
of ethyl ether (FRANCHIMONT), 1877, ii., 425.  
of water, lowering of the, by pressure (DEWAR), 1880, A., 845; 1882, A., 270.
- Freieslebenite** from Hiendelaencina, Spain (BÜCKING), 1881, A., 24.
- Frenzelite** (*guanajuatite*) (FRENZEL), 1874, 1140; 1876, i., 53.  
from Mexico (MALET), 1878, A., 651; 1881, A., 361.
- Friction**, action of, in liberating gas from solutions (TOMLINSON), 1875, 330; 1876, i., 186.  
internal. See Viscosity.
- Friedelite**, a new manganese silicate from the Pyrenees (BERTRAND), 1876, ii., 387.
- Frieseite**, composition of (VRBA), 1878, A., 942; 1881, A., 689.  
from Joachimsthal (VRBA), 1882, A., 574.
- Frogs**, breathing of (MÜLLER-ERZBACH), 1873, 1154.
- Frost**, action of, on evergreens (MOLL), 1882, A., 549.  
influence of, on the composition of sugar beets (NINGER), 1881, A., 1084.  
and ozone, effects produced by, on cotton fabrics (GOPPELSROEDER), 1876, ii., 231.
- Fructus papaveris.* See Poppies.
- Fruit**, gases in (V. STRUVE), 1876, ii., 113; (LIVACHE), 1877, ii., 913.  
amount of nitrogen in worm-eaten (STEFANELLI), 1876, i., 421.  
formation of sugar in (MERCADANTE), 1875, 904.  
nutritive value of (KÖNIG), 1880, A., 733.  
fermentation of (LECHARTIER and BELLAMY), 1873, 293; 1876, i., 738; (PASTEUR), 1873, 293.  
fermentation of, and the diffusion of the germs of alcoholic ferments (PASTEUR), 1876, ii., 541.  
fermentation of, action of antiseptic and toxic vapours on (LECHARTIER and BELLAMY), 1877, ii., 507; (GAYON), 1877, ii., 508.  
plunged into carbonic anhydride, fermentation of (JOUBERT and CHAMBERLAND), 1877, i., 106.  
ripening of (PORTELE), 1879, A., 1047; 1880, A., 178, 336.  
preservation of, in winter (SORAUER), 1881, A., 132.  
substitution of chlorophyll for copper salts in the preservation of (GUILLEMARE), 1878, A., 188.  
method of estimating the air space in (ADAMEC and KLOSE), 1880, A., 189.  
of *Lithospermum officinale*, composition of the ashes of the (HÖRNBACHER, MUTSCHLER and HAMMERBACHER), 1875, 910.  
of *Onophloeocarpum procerum* (NAYLOR), 1882, A., 307.  
dried, composition of (BERTRAM), 1877, ii., 797.  
See also under Agricultural Chemistry.

- Fruit-juices** of different ages, behaviour of, with reagents (v. LEPEL), 1880, A., 354.  
detection of salicylic acid in (WEIGERT), 1880, A., 352.
- Fruit-sugar.** See Levulose under Carbohydrates.
- Fruit-trees.** See under Agricultural Chemistry.
- Fuchsine.** See Magenta under Colouring matters.
- Fucus amylaceus**, carbohydrate from (GREENISH), 1882, A., 939, 1044.  
complete analysis of (GREENISH), 1882, A., 1044.
- Füh-ling** (*Lycoperdon solidum*), from China, composition of (KELLER), 1877, i., 337.
- Fuel**, burning of, in house stoves (FISCHER), 1880, A., 145; (BODE), 1882, A., 1331.  
new application of rapid oxidation, by which sulphides are utilised for (HOLLWAY), 1879, A., 755.  
preparation of artificial (WEBER), 1874, 1022.  
artificial, from coal-dust (LOISEAU), 1873, 420.  
of the future, water-gas as (QUAGLIO), 1882, A., 114.  
examination of (LUNGE), 1882, A., 773.  
used in the iron industry, estimation of sulphur in (ROLLER), 1879, A., 974.  
See also Anthracite, Coal and Lignite.
- Fulgurite**, found at Elspert, Gelders (HARTING), 1875, 1166.
- Fulminic acid** (WURSTER), 1874, 255.  
properties of certain salts of (DAVY), 1876, i., 702.  
mercury salt of, heat of formation of (BERTHELOT and VIEILLE), 1881, A., 780.  
solubility of (STEINER), 1876, i., 378.  
explosive properties of (BERTHELOT and VIEILLE), 1881, A., 779.  
action of ammonia and substituted ammonias on (STEINER), 1875, 164, 882; 1876, ii., 288.  
action of hydrogen sulphide on (STEINER), 1876, i., 378; ii., 288.  
action of various substances on (CARSTANJEN and EHRENBURG), 1882, A., 816.
- Fulminoplatinums** (v. MEYER), 1879, A., 373.
- Fumaric acid** (FITTIG), 1876, i., 898; (FITTIG and PETRI), 1879, A., 372.
- Fumaric acid**, formation of (KISIELIŃSKI), 1878, A., 43.  
formation of, from dibromosuccinic acid (OSSIPOFF), 1881, A., 416.  
and inactive malic acid, production of, from glyceric acid (WERIGO and TANATAR), 1875, 357.  
preparation of (PURDIE), 1881, T., 345.  
formula of (HÜBNER), 1881, A., 254.  
etherification of (MENSCHUTKIN), 1882, A., 383.  
relation of, to maleic acid (FITTIG), 1877, ii., 430.  
conversion of, into maleic acid (PICKET), 1882, A., 389.  
action of acetic chloride on (PERKIN), 1882, T., 268.  
action of acetic chloride and acetic acid on (ANSCHÜTZ and BENNETT), 1882, A., 828.  
behaviour of, with fuming hydrobromic acid (FITTIG), 1877, ii., 738.  
silver salt of, action of ethylic iodide on (ANSCHÜTZ), 1879, A., 223.  
action of iodine on the (BIRNBAUM and GAIER), 1880, A., 801.  
bromo- (*isobromomaleic acid*) (ANSCHÜTZ), 1878, A., 137.  
dibromo-, formation of, by the action of bromine on mucobromic acid (LIMPRICHT), 1873, 625.
- Fumarimide**, bromo- (KISIELIŃSKI), 1878, A., 43.
- Fume condensing**, new process of (FRENCH), 1880, A., 146.
- Fumeroles** of Nisyros (GORCEIX), 1873, 1212; 1874, 347, 561, 1073; 1875, 48.
- Fungi**, behaviour of, in the animal system (GRAWITZ), 1881, A., 930.  
formation of fat in (v. NÄGELI and LOEW), 1880, A., 337.  
sugars from (MÜNTZ), 1873, 759; 1875, 380.  
occurrence of oxalic acid in (HAMLET and PLOWRIGHT), 1877, ii., 796.  
destruction of, in buildings (ANON.), 1874, 400.  
house-, salicylic acid as a preventative of (FARSKÝ), 1879, A., 1080.  
waterglass or infusorial earth as a preventative (ZERENNER), 1879, A., 1080.  
do the, which form and grow upon organic substances, derive their nitrogen from the atmosphere? (SESTINI and DEL TORRE), 1876, i., 736.  
See also Agricultural Chemistry, Moulds and Mushrooms.

- Fungin** (*metacellulose*) (FREMY), 1877, i., 229.
- Fungus**, substance extracted from a Chinese (CHAMPION), 1873, 283.
- Fur** of rabbits and hares, preparation of, for the manufacture of felt without the use of mercury (DELPECH), 1874, 99.
- Furane**. See Furfuran.
- Furfur-**. See Furfuryl-.
- Furfuraldehyde** (*furfural*; *furfurol*) (v. BAEYER), 1877, ii., 444; (SCHIFF), 1877, ii., 742; (FISCHER), 1880, A., 798; 1882, A., 499.  
occurrence of, in glacial acetic acid (MEYER), 1879, A., 137.  
in fermented liquids (FÖRSTER), 1882, A., 710; (JORISSEN), 1882, A., 941.  
production of, by the dry distillation of wood (HILL), 1877, ii., 746; 1882, A., 296.  
production of, by the action of superheated steam on wood (MÜLLER; WILLIAMS), 1873, 162.  
heat of formation of (RAMSAY), 1879, T., 696.  
action of acetone on, in presence of alkaline solutions (SCHMIDT), 1881, A., 573, 889; (CLAISEN), 1882, A., 513.  
action of aldehyde on (SCHMIDT), 1881, A., 247, 573.  
action of dimethylaniline on (FISCHER), 1878, A., 46.  
reaction of urea with (SCHIFF), 1877, ii., 742.  
colouring matters from (SCHIFF), 1880, A., 391.
- Furfuraldehydephenylhydrazone** (FISCHER), 1878, A., 310.
- Furfuramide**, and the action of nitrous acid and of thiocarbimides on (SCHIFF), 1878, A., 45.
- Furfuramidobenzoic acid** (SCHIFF), 1880, A., 392.
- Furfuran** (*furane*; *tetraphenol*) (ATTERBERG), 1880, A., 663.  
constitution of (v. BAEYER), 1877, ii., 744.
- Furfuran- $\alpha$ -carboxylic acid**. See Pyromucic acid.
- Furfurenylamidophenanthrol**, and its properties (JAPP and WILCOCK), 1881, T., 227.
- Furfurine**, and the action of nitrous acid on (SCHIFF), 1878, A., 45.  
nitrosamine of (SCHIFF), 1878, A., 657.
- Furfurol**. See Furfuraldehyde.
- Furfuronitrile** (WALLACH), 1881, A., 715; (CIAMICIAN and DENNSTEDT), 1881, A., 801.
- Furfuryl alcohol**. See Furfurylcarbinol.
- Furfurylacraldehyde** (*furfuracrolein*) (SCHMIDT), 1881, A., 247.
- Furfurylacrylic acid** (v. BAEYER), 1877, ii., 444.
- Furfurylangelic acid** (v. BAEYER and TÖNNIES), 1877, ii., 746.  
conversion of, into azelaic acid (TÖNNIES), 1879, A., 915.
- Furfurylbenzidine** (SCHIFF), 1880, A., 392.
- Furfurylbutylene** (v. BAEYER and TÖNNIES), 1877, ii., 746.
- Furfurylcarbinol** (*furfuryl alcohol*) (LIMPRICHT), 1873, 626.
- Furfurylcarbinylamine** (CIAMICIAN and DENNSTEDT), 1881, A., 801, 897.
- Furfurylerotonaldehyde** (SCHMIDT), 1881, A., 573.
- Furfurylideneacetone**. See Furfurylvinyl methyl ketone.
- Furfurylpropionic acid** (v. BAEYER), 1877, ii., 445.
- Furfurylvaleric acid** (TÖNNIES), 1879, A., 916.
- Furfurylvinyl methyl ketone** (*furfurylideneacetone*) (CLAISEN), 1882, A., 513.
- Furfurylvinyl styryl ketone** (CLAISEN), 1882, A., 513.
- Furil**, and the action of potash on, and acbromide, and *mono-* and *di-*bromo- (FISCHER), 1880, A., 798; 1882, A., 499.
- Furilic acid** (FISCHER), 1882, A., 500.
- Furnace**, blast. See Blast furnace.  
electric (SIEMENS and HUNTINGDON), 1882, A., 1241.  
cascade, for iron smelting (SIEMENS), 1873, 671.  
Siemens', cost of setting up a (BARNES), 1878, A., 456.  
iron, Khern's, for use with lignite (ANON.), 1873, 98.  
puddling, Casson-Derimoy's (ANON.), 1878, A., 456.  
action of (BELL), 1878, A., 95.  
Freiberg lead (ANON.), 1881, A., 208.  
painted-glass, photo-electric regulator for (GERMAIN), 1881, A., 125.
- Furnace gases**, rendering, inactive (ANON.), 1881, A., 474.  
injurious effect of, on the woods of the Upper Harz (REUSS), 1881, A., 1064, 1179.  
from the Bessemer converter (GUYARD), 1880, A., 769.  
from blast furnaces (KENT), 1876, i., 969.  
combustibility of (PATTINSON), 1877, ii., 375.



**Furnace gases** from metallurgical hearths (CAILLETET), 1877, ii., 949.

from ultramarine furnaces, temperature and composition of (FISCHER), 1877, i., 111.

analyses of (BUNTE), 1881, A., 939.  
See also Smoke.

**Furnace linings**, basic, preparation of, for dephosphorising pig-iron (ANON.), 1882, A., 1012, 1334.

**Furnace-products**, two (BRÖGGER), 1881, A., 353.

containing magnetic iron oxide (VÖLKER), 1873, 254.

crystalline, from a blown out iron furnace (JOHNSTON), 1875, 1163.

**Furoin** (FISCHER), 1880, A., 798; 1882, A., 499.

**Furze** (*Ulex europaeus*), cultivation of (SCHIRMER-NEUHAUS), 1881, A., 116.

**Fuscosclerotic acid** (DRAGENDORFF), 1878, A., 518.

**Fusel-oil** from potatoes, alcohols in (RABUTEAU), 1879, A., 36.

bases from (SCHRÖTTER), 1880, A., 234.

detection of alcohol in (ULEX), 1873, 1164.

detection of, in alcohol (BOUVIER), 1873, 532; (ANON.), 1873, 655;

(JORISSEN), 1882, A., 429; (MÄRCKER), 1882, A., 1145.

detection of, in spirits (DUPRÉ), 1876, ii., 215; (JORISSEN), 1882, A., 429.

cause of Jorissen's reaction for (JORISSEN; FÖRSTER), 1882, A., 1002.

estimation of, in alcohol (HAGER), 1882, A., 339; (MARQUARDT), 1882, A., 1235, 1327.

See also *isoAmylic* alcohol.

## G.

**Gabbros**, composition of, from Prato in Tuscany (DRECHSLER), 1873, 856; (COSSA), 1882, A., 586.

**Gadolinite**, composition of (HUMPIDGE and BURNEY), 1879, T., 117.

orthite, and similar minerals, appearance of, under the microscope (SJÖGREN), 1878, A., 387.

**Gadolinite earths**. See Earths, rare.

**Gahnite** (VOM RATH), 1881, A., 549.

**Galactin** (MÜNTZ), 1882, A., 707.

**Galactine** (BLYTH), 1879, T., 532.

**Galactonic acid** (*lactonic acid*), preparation and oxidation of (KILIANI), 1881, A., 243.

potassium salt of (KILIANI), 1881, A., 580.

**Galactose**. See under Carbohydrates.

**Galanga root**, substances obtained from (JAHNS), 1882, A., 208, 866.

**Galangin**, and its derivatives (JAHNS), 1882, A., 209, 866.

**Galbanum** (HIRSCHSOHN), 1878, A., 158.

**Galena** (*galenite*) from Engelskirchen (GURLT), 1877, ii., 855.

from Habach in Salzburg (v. ZEPHAROVICH), 1878, A., 207.

from the Morgenstern Mine, in Westphalia (VOM RATH), 1881, A., 548.

use of potassium hydrogen sulphate to detect the presence of (JANNETTAZ), 1874, 188.

composition of (WITTSTEIN), 1873, 652.

concussion-figures of (WEISS), 1878, A., 550.

crystallisation of (SADEBECK), 1875, 625.

presence of metallic silver in (PHIPSON), 1874, 662.

estimation of silver in (BALLING), 1880, A., 748.

estimation of lead sulphate in (LOEWÉ), 1874, 1180.

See also Lead sulphide.

**Galenobismuthite** (SJÖGREN), 1880, A., 14; 1881, A., 689.

**Galeopsis Tetrahit**, ash analysis of the hay of (THOMS), 1880, A., 343.

**Gallacetone** (WITTENBERG), 1882, A., 1290.

**Gallacetophenone**. See Trihydroxy-acetophenone.

**Gallein**, and its derivatives based on triphenylmethane, and phenyl-anthracene (v. BUCHKA), 1882, A., 58.

manufacture of (DE MONTLAUR), 1882, A., 126.

and cerulein, preparation of, and printing and dyeing with (DURAND), 1878, A., 924.

dibromo- (v. BUCHKA), 1882, A., 61.

**Gallic acid** (3:4:5-trihydroxybenzoic acid) and its salts (SENHOFER and BRUNNER), 1881, A., 267.

melting point of (ETTI), 1879, A., 160.

action of sulphuric acid on a mixture of benzoic acid and (SEUBERLICH), 1877, ii., 894.

action of arsenic acid on (SCHIFF), 1874, 269; (FREDA), 1878, A., 672.

action of bromine on (STENHOUSE), 1874, 587; 1875, 9.

action of phosphoryl chloride on (SCHIFF), 1874, 267.

- Gallic acid** (3:4:5-*trihydroxybenzoic acid*), new condensation-product of (OSER and FLÜGL), 1876, i., 926; (OSER and BÖCKER), 1880, A., 394.
- a crystalline substance formed by the action of arsenic acid on, and the nature of the tannin of gall-nuts (SCHIFF), 1874, 269; (FREDA), 1878, A., 672.
- new derivative of (OSER and KALMANN), 1881, A., 815.
- aluminium salt of, solubility of, in water (LIDOFF), 1882, A., 849.
- a reaction of (PROCTER), 1874, 509; (FLÜCKIGER), 1875, 105.
- modification of Pettenkofer's test for (DRECHSEL), 1882, A., 108.
- estimation of (PRUD'HOMME), 1875, 1054.
- estimation, volumetric, of (JEAN), 1876, ii., 117.
- Gallin** (v. BUCHKA), 1882, A., 59, 61.
- Gallium** (LECOQ DE BOISBAUDRAN), 1876, ii., 484; (DUPRÉ), 1878, A., 472; (LECOQ DE BOISBAUDRAN and JUNGFLEISCH), 1878, A., 556, 837.
- in American blends (CORNWALL), 1881, A., 997.
- remarks suggested by the discovery of (MENDELÉEFF), 1876, i., 520.
- extraction of (LECOQ DE BOISBAUDRAN), 1876, ii., 275; 1877, i., 48; (LECOQ DE BOISBAUDRAN and JUNGFLEISCH), 1878, A., 374.
- physical properties of (LECOQ DE BOISBAUDRAN), 1876, i., 190, 521; 1877, i., 48.
- spectrum of (LECOQ DE BOISBAUDRAN), 1876, i., 190, 882.
- specific heat and heat of fusion of (BERTHELOT), 1878, A., 556.
- crystals of (LECOQ DE BOISBAUDRAN), 1877, i., 442.
- equivalent of (LECOQ DE BOISBAUDRAN), 1878, A., 646.
- Gallium alloys** with aluminium (LECOQ DE BOISBAUDRAN), 1878, A., 704.
- Gallium salts**, reactions of (LECOQ DE BOISBAUDRAN), 1877, i., 167; 1882, A., 364.
- Gallium bromide** (LECOQ DE BOISBAUDRAN and JUNGFLEISCH), 1878, A., 837.
- chlorides, anhydrous (LECOQ DE BOISBAUDRAN), 1881, A., 1103; 1882, A., 1167.
- oxychloride (LECOQ DE BOISBAUDRAN), 1882, A., 698.
- iodide (LECOQ DE BOISBAUDRAN and JUNGFLEISCH), 1878, A., 837.
- Gallium**, separation of (LECOQ DE BOISBAUDRAN), 1882, A., 897, 1323.
- Gallocarboxylic acid** and its salts. See Pyrogalloldicarboxylic acid.
- Gallol** (v. BUCHKA), 1882, A., 59, 61.
- Gallotannic acid** (LÖWE), 1873, 748; (PHIPSON), 1878, A., 982.
- See also Digallic acid.
- Galvanic**. See Electrochemistry.
- Gambogic acid**, and **gamboge** (COSTELO), 1879, A., 1042.
- Ganomalite** (v. NORDENSKIÖLD), 1879, A., 22.
- Garden**. See under Agricultural Chemistry.
- Gardenia lucida*, terpene from (STENHOUSE and GROVES), 1879, T., 691.
- Gardenic acid** (STENHOUSE and GROVES), 1879, T., 691.
- Gardenin**, and its reactions and derivatives (STENHOUSE and GROVES), 1877, i., 551; 1879, T., 688.
- Garnet**, compact, microscopical examinations of thin sections of (WICHMANN), 1876, ii., 51.
- doubly refracting (WICHMANN), 1876, ii., 178.
- idocrase and datolite, association of (SMITH), 1875, 136.
- from Salm-Chateau, Belgium (DE CONINCK), 1873, 1114.
- from the Cape of Good Hope (KNAP), 1878, A., 946.
- yellow, at Costa di Viesena (DOELTER), 1878, A., 391.
- from Geyer in Saxony (v. LASAULX), 1875, 625.
- in a Cambrian clay-slate from Lemmingsstorp (SVEDMARK), 1878, A., 386.
- in the trap-rocks of New Haven, Connecticut (DANA), 1878, A., 386.
- from the Pfitschthal in Tyrol, unusual and anomalous faces on (VOM RATII), 1878, A., 944.
- green, from Val Malenco (COSSA), 1881, A., 235.
- from the erratic gneiss of Wellen, near Bremen (LANG), 1879, A., 361.
- chromium (KLIEN), 1879, A., 361.
- found on the Pic Posetz, near the Maladetta (Pyrenees) (DAMOUR), 1881, A., 376.
- lime-iron (SJÖGREN), 1881, A., 698.
- volume constitution of (SCHRÖDER), 1874, 875.
- (*demanoid*) from Syssertzk in the Urals (LÖSCH), 1881, A., 538.

**Garnet**, magnesium-, or Russian retinite (PISANI), 1879, A., 441.  
 pseudomorph after (SCHARIZER), 1881, A., 544.  
 conversion of, into chlorite (NIEDZWIEDZKI), 1873, 855.  
 pseudomorphosis of, into mica (HOLLAND), 1873, 356.  
**Garnet-group** of silicates, primary nucleus of (v. HAUSHOFER), 1874, 27.  
**Garnet-olivine-rock** (DATHE), 1876, ii., 388, 612.  
**Garnierite** (GARNIER), 1876, ii., 492; 1878, A., 480; (v. WAGNER), 1879, A., 184.  
 from New Caledonia (VOM RATH), 1881, A., 549.  
 composition of (DONATH), 1880, A., 771.  
*Garrya Fremontii*, and garryin from (ROSS), 1878, A., 327.  
**Gas**, compressed, spectrum produced by the electric spark in a (CAZIN), 1878, A., 357.  
 ratio of the two specific heats of a (SIMON), 1877, i., 162.  
 ratio of the specific heats in a, having monatomic molecules (YVON-VILLARCEAU), 1876, ii., 374.  
 determination of the relation between the two specific heats by the compression of a limited volume of (AMAGAT), 1874, 429.  
 relation between the pressure, volume, and absolute temperature of a (SARRAU), 1882, A., 686.  
 dissolved in a liquid, influence of the quantity of, on the surface-tension of the latter (v. WROBLEWSKI), 1882, A., 1259.  
 quick diffusion of a, into a subjacent heavier gas (v. PETTENKOFER), 1874, 16.  
 from a pyæmic abscess, composition and possible origin of (HÜFNER), 1876, ii., 212.  
 evolved by the action of barium hydroxide on albuminoids (LIEBERMANN), 1879, A., 735.  
 composition of, from a shaft of Abercarn Colliery (THOMAS), 1879, A., 357.  
 composition of an inflammable, issuing from the silt-bed in Belfast (ANDREWS), 1875, 242.  
 from the Lago di Naftia, or Lago dei Palici at Etna, composition of (AMATO and FIGUERA), 1880, A., 345.  
 absorption and emission of, by the roots of plants (DEHÉRAIN and VESQUE), 1877, ii., 350.

**Gas**, coal-. See Coal-gas.  
 illuminating, processes which take place in the imperfect combustion of (BLOCHMANN), 1875, 137.  
 and coal-gas, physiological action of (POLECK and BIEFEL), 1878, A., 906; 1881, A., 853.  
 analysis of (BERTHELOT), 1877, i., 743.  
 estimation of sulphur in (POLECK and BIEFEL), 1879, A., 78.  
 See also Coal-gas.  
 natural, of Pennsylvania (SMITH), 1877, i., 287.  
 petroleum-, products from the manufacture of (RUDNEFF), 1881, A., 329.  
 water, Strong's (DWIGHT), 1880, A., 930.  
 as the fuel of the future (QUAGLIO), 1882, A., 114.  
 wood, Wilkinson's process for the manufacture of, from wood (DORR-MUS), 1881, A., 769, 954.  
**Gas-analysis** (WINKLER), 1873, 651; (BLOCHMANN), 1874, 290; (MOHR), 1874, 291; (THOMAS), 1877, ii., 28; (BUNTE), 1878, A., 808; (FILETI), 1881, A., 462.  
 use of bromine in (BERTHELOT), 1878, A., 91.  
 apparatus for (REICHARDT), 1873, 412; (LIEBIG), 1873, 936; (BEFSELEY), 1874, 386; (RAOULT), 1876, ii., 213; (THOMAS), 1879, T., 213; (THRESH), 1881, T., 399; (FISCHER), 1881, A., 325; (WANKLYN and COOPER), 1881, A., 939; (MORLEY), 1882, A., 1131; (SOKOLOFF), 1882, A., 1229.  
 See also Coal-gas and Gas illuminating.  
**Gas-apparatus** for quantitative blow-pipe analysis (HIRSCHWALD), 1877, ii., 215.  
 for heating in laboratories (FLETCHER), 1873, 540.  
**Gas-burners**, glass (LECOQ DE BOISBAUDRAN), 1875, 1236.  
**Gaseous matter**, action of an intermittent beam of radiant heat on (TYNDALL), 1881, A., 966.  
**Gaseous mixtures**, compression of (CAILLETET), 1880, A., 604.  
 liquefaction of (CAILLETET and HAUTEFEUILLE), 1881, A., 676.  
 temperature of ignition of (MALLARD and LE CHATELIER), 1881, A., 778.  
 explosive, velocity of propagation of inflammation in (MALLARD and LE CHATELIER), 1881, A., 971.

- Gaseous state**, heat disengaged by combination in the (BERTHELOT), 1877, ii., 825.  
 and liquid state (HANNAY), 1882, A., 688.  
 physical properties of matter in the, under varied conditions of temperature and pressure (ANDREWS), 1876, ii., 159.
- Gases** in fruit (v. STRUVE), 1876, ii., 113; (LIVACHE), 1877, ii., 913.  
 and slags from blast furnaces, chemical composition of (KENT), 1876, i., 969.  
 evolved from ultramarine furnaces, temperature and composition of (FISCHER), 1877, i., 111.  
 from Bessemer converters (GUYARD), 1880, A., 769.  
 issuing from metallurgical hearths, utilisation of (CAILLETET), 1877, ii., 949.  
 evolved from molten iron (LEDEBUR), 1874, 659.  
 in iron and steel (MÜLLER), 1879, A., 437.  
 composition of the, obtained by burning pyrites (SCHEURER-KESTNER), 1876, ii., 120.  
 in meteorites (WRIGHT), 1876, i., 27; 1877, i., 289, 702; (MALLET), 1876, i., 892.  
 from the meteorite of Feb. 12, 1875 (WRIGHT), 1876, i., 352.  
 from the volcano of Nisyros, composition of (GORCEIX), 1873, 1212; 1874, 347, 561, 1073; 1875, 48.  
 of the Grotta del Cane (FINOR), 1877, i., 448; (YOUNG), 1878, T., 51; (COSSA), 1878, A., 955.  
 from the Springs of Inselbad (Paderborn) and their application to inhalation (v. MEYER), 1873, 360, 1212.  
 from the Liebfrauensee of Kissingen (BENDER), 1873, 359.  
 in sea water (JACOBSEN), 1873, 860; (BUCHANAN), 1878, A., 197.  
 combustible, composition of, in the Stassfurt mines (PRECHT), 1879, A., 603.  
 evolved in Leblanc's soda-process, composition of (FISCHER), 1877, i., 236.  
 in the soil (v. FODOR), 1876, ii., 57.  
 in the cells of wood, composition of (BÖHM), 1878, A., 802.  
 action of solids and of friction in liberating, from solutions (TOMLINSON), 1875, 330; 1876, i., 186.
- Gases**, analogy between the disengagement from their supersaturated solution and the decomposition of certain explosive bodies (GERNEZ), 1875, 417.  
 mechanical actions of incandescent (DAUBRÉE), 1877, ii. 161, 835.  
 new phenomena shown by (MITSCHERLICH), 1879, A., 587.  
 mixture of (MOUTIER), 1875, 1153.  
 relative space occupied by (SCHMIDT), 1880, A., 87.  
 gauge for measuring the volume of, without calculation for temperature and pressure (BARNES), 1881, T., 462.  
 estimation of variable volumes of air and (HARTING), 1873, 349, 590.  
 molecular, dynamical evidence of the constitution of (MAXWELL), 1875, 493.  
 spectra of (GOLDSTEIN), 1875, 527; 1876, i., 181; (WÜLLNER), 1875, 527.  
 spectra of compound (HAUTEFEUILLE and CHAPPUIS), 1881, A., 221.  
 spectra of incandescent (SCHENK), 1874, 1112; 1875, 119.  
 relative intensity of the spectral lines of (CAPRON), 1880, A., 685.  
 spectra of, in Geissler's tubes (WÜLLNER), 1873, 242; 1874, 113; 1875, 527.  
 influence of temperature and pressure on the spectra of (CIAMICIAN), 1879, A., 101, 685.  
 influence of pressure on (STEARNS and LEE), 1873, 996.  
 refraction and dispersion of (MASCART), 1874, 538.  
 refraction of vapours and (MASCART), 1878, A., 359.  
 molecular rotation of (HINRICHS), 1873, 838.  
 magnetic rotatory power of, at ordinary temperature and pressure (BEQUEREL), 1879, A., 576.  
 action of electricity on (NEYRENEUF), 1874, 757; 1875, 39.  
 behaviour of electric currents in rarefied (NARR), 1879, A., 345; 1881, A., 70.  
 and mixtures of gases, action of the electric current on some (v. WILDE), 1874, 646.  
 active properties acquired by some, under the influence of the silent-discharge of electricity (CHABRIER), 1873, 29.



**Gases**, action of magnets on rarefied, enclosed in capillary tubes, and traversed by induction currents (CHAUTARD), 1875, 726.  
 luminous appearances of rarefied, in tubes with liquid electrodes (PAALZOW), 1879, A., 861.  
 electric conductivity of heated (BLONDLOT), 1881, A., 671.  
 electrical resistance of (EDLUND), 1882, A., 681.  
 conduction of heat in (STEFAN), 1876, ii., 37.  
 cooling power of (WITZ), 1881, A., 341.  
 specific heat of (FLAWITZKY), 1874, 219; 1881, A., 340; (WIEDEMANN), 1875, 328; 1876, ii., 589.  
 specific heats of, at high temperatures (MALLARD and LE CHATELIER), 1882, A., 449.  
 relation between the specific heat, temperature, and conductivity of (WÜLLNER), 1879, A., 2.  
 specific heat of, with especial reference to mercury vapour (NAUMANN), 1876, i., 37.  
 law of Dulong and Petit applied to perfect (WILLOTTE), 1880, A., 83.  
 heat of combustion of (v. THAN), 1881, A., 779.  
 incomplete combustion of (BÖTSCH), 1882, A., 455.  
 equilibrium of temperature of, upon which exterior forces act (BOLTZMANN), 1876, ii., 38.  
 thermal effect of the walls of closed vessels on the contained (WITZ), 1879, A., 432.  
 compressibility of (CAILLETET), 1879, A., 429; (SARRAU), 1882, A., 686.  
 compressibility of, at low pressures (v. HEMILIAN, MENDELÉEFF, and v. BOGUSKI), 1877, i., 32; (MENDELÉEFF and v. HEMILIAN), 1877, i., 164.  
 compressibility of, at high temperatures (AMAGAT), 1879, A., 1004.  
 dilatation and compressibility of, under high pressures (AMAGAT), 1881, A., 12.  
 deviation of some, from Boyle's law (WINKELMANN), 1879, A., 346.  
 especially hydrogen, deviations of, from Mariotte's law (BUDDE), 1874, 646.  
 relations between the variations of density and elasticity of, at pressures less than one atmosphere (SILJESTRÖM), 1875, 38; (MENDELÉEFF), 1875, 231.

**Gases**, elasticity of rarefied (AMAGAT), 1882, A., 1259.  
 industrial production of cold by the expansion of permanent (ARMENGAUD), 1873, 716.  
 influence of pressure and temperature on the surface condensation of (KAYSER), 1882, A., 270.  
 condensation of, on the surface of solid bodies (WEBER), 1873, 468.  
 thermic researches on the condensation of, by solid bodies (FAVRE), 1874, 15, 1048, 1050.  
 critical state of (RAMSAY), 1881, A., 971; 1882, A., 267.  
 relation between molecular weight and density of (NAUMANN), 1880, A., 525.  
 permanent, determination of the densities of (MEYER), 1881, A., 137; (MEYER and GOLDSCHMIDT), 1882, A., 771, 1159.  
 specific weights of: lecture experiment (MÜLLER), 1877, i., 431.  
 diffusion of (KUNDT), 1878, A., 7.  
 motion produced by the diffusion of (SAINTE-CLAIRE DEVILLE), 1880, A., 293.  
 thermo-diffusion of (FEDDERSEN), 1873, 834.  
 diffusion of, in liquid, viscous, and solid bodies (v. WROBLEWSKI), 1878, A., 369.  
 migration of (BELLAMY), 1877, i., 32.  
 transpiration of (MEYER and SPRINGMÜHL), 1873, 468.  
 passage of, through liquid diaphragms (EXNER), 1876, ii., 163.  
 diffusion of, through walls of soap-bubbles (MÜLLER), 1875, 231, 1157.  
 diffusion of, through porous walls, and the accompanying changes of temperature (DUFOUR), 1873, 835.  
 endosmose of, through vegetable membranes (BARTHÉLEMY), 1873, 1251.  
 relation between work effected by the diffusion of, and the second law of thermodynamics (CLAUSIUS), 1879, A., 3.  
 flow of (NEYRENEUF), 1882, A., 568.  
 expansion-coefficient of (v. JOLLY), 1874, 1047; (MENDELÉEFF and KAJANDER), 1877, i., 31.  
 liquefaction of: a lecture experiment (SCHULZE), 1880, A., 366.  
 viscosity of (MEYER), 1873, 838; (CROOKES), 1881, A., 678, 971.  
 absorption of, by the aid of heat (SCHLESING), 1882, A., 902.

- Gases**, expansion of liquids by the absorption of (MACKENZIE and NICHOLLS), 1878, A., 366.
- absorption of, by liquids (NACCARI and PAGLIANI), 1880, A., 525.
- absorption of, by saline solutions (MACKENZIE), 1877, ii., 833.
- absorption of, by solids (HANNAY), 1881, A., 872, 971; 1882, A., 272.
- absorption of, by platinum (BERTHELOT), 1882, A., 1022.
- absorption of, by charcoal: a new series of equivalents or molecular numbers (SMITH), 1879, A., 500.
- absorption of, by wood charcoal, and charcoal saturated with liquid (JOUIN), 1880, A., 526.
- and vapours condensed by charcoal, action of heat on (MELSENS), 1874, 120.
- solubility of solids in (HANNAY and HOGARTH), 1880, A., 210, 693; 1881, A., 970; 1882, A., 271.
- solubility of, in absorption liquids and in vulcanised caoutchouc (HEMPFEL), 1882, A., 1132.
- solution of, in iron, steel and manganese (TROOST and HAUTEFEUILLE), 1873, 729; 1877, i., 51.
- occluded in aluminium and magnesium (DUMAS), 1881, A., 350.
- occluded in coals (MEYER), 1873, 483; (THOMAS), 1875, 793; 1876, ii., 144; 1877, ii., 146.
- enclosed in lignites (KOLBE and ZITOWITSCH), 1873, 43.
- action of bacteria on (HATTON), 1881, T., 247.
- influence of, on fermentation (NASSE), 1878, A., 90.
- glass impervious to (QUINCKE), 1877, ii., 165.
- flames of compressed (BENEVIDES), 1873, 590.
- hot, erosive action of strongly compressed, with reference to the history of meteorites (DAUBRÉE), 1877, ii., 835; 1879, A., 1024.
- photochemical researches on the use of, as developers (MERGET), 1873, 1169; 1874, 1020.
- action of non-combustible, in putting out flames (STEIN), 1874, 929.
- exchanges of, between plants and the atmosphere (DEHÉRAIN and VESQUE), 1877, ii., 350; (MERGET), 1877, ii., 350, 634.
- acid, rendering, inactive (ANON.), 1881, A., 305.
- Gases**, noxious, evolved in the manufacture of ammonia from liquid sewage, destruction of (CHATEAU), 1882, A., 115.
- injurious effect of, on soils (KÖNIG), 1880, A., 497; 1882, A., 331.
- action of, on seeds (GIGLIOLI), 1880, A., 280.
- part played by, in the coagulation of albumin (MATHIEU and URBAIN), 1873, 1247; 1875, 372; 1876, i., 87.
- part played by, in the coagulation of blood (MATHIEU and URBAIN), 1875, 372; 1876, i., 87.
- combustion-, limits of error in analyses of (WAGNER), 1881, A., 205.
- in liquids, apparatus for the estimation of (REICHARDT), 1873, 412.
- in water, estimation of (BELLAMY), 1878, A., 91.
- dissolved in water, estimation of, on boiling (REICHARDT), 1876, i., 354.
- dissolved in water, apparatus for collecting (THOMAS), 1877, ii., 806; (THRESH), 1881, T., 399.
- estimation of carbonic anhydride in (GAWALOWSKI), 1880, A., 573.
- and corrosive liquids, valve for (RIDOUT), 1874, 538.
- furnace-. See Furnace-gases.
- volcanic-. See Volcanic-gases.
- Gas explosions**, danger of (MALLARD), 1882, A., 920.
- propagation of (BERTHELOT and VIELLE), 1882, A., 685, 1260, 1261; (BERTHELOT), 1882, A., 685.
- Gas extinguisher**, automatic (MICHAELIS), 1882, A., 1243.
- Gas-generators** (WARTHIA), 1873, 132; (WOODWARD), 1874, 122; (THUM), 1875, 108; (KAEMMERER), 1875, 998; (GROEBE and LÜRMANN), 1878, A., 349.
- Gas-holders** (MOHR), 1873, 36; (SEIDLER), 1877, ii., 275; (ATTENKOFER), 1879, A., 877.
- Gas lighting** (VAN EYNDHOVEN), 1879, A., 85.
- Gas-lime**, composition of (GUYARD), 1876, ii., 123.
- use for a constituent of (DOUGLAS), 1878, A., 624.
- Gasoline**, explosion of (WEBER), 1881, A., 1181.
- Gas-liquors** from gas-works (GERLACH), 1873, 302; 1875, 195.
- use of the ammonia-soda process in working up (GERLACH), 1877, ii., 236.

- Gas-liquors**, application of, to the production of potassium carbonate and other salts (WALLACE and CLAUS), 1879, A., 677.  
 extraction of ammonium thiocyanate from (ANON.), 1880, A., 358.  
 contamination of well-water by (VOHL), 1877, ii., 920.  
 testing and valuing (DAVIS), 1879, A., 79.
- Gas-motors**, Dowson's apparatus for making a cheap gas for (ANON.), 1882, A., 430.
- Gasometer**. See Gas-holder.
- Gas-pipes**, peculiar changes in (BIRNBAUM), 1880, A., 198.
- Gas-purifier**, Laming's (ANON.), 1874, 836.
- Gas-regulator**, simple form of (FLETCHER), 1876, i., 488.  
 for air-baths (CRESTI), 1879, A., 294.  
 a simple form of, for maintaining a constant temperature in air-baths, water-baths, incubators, etc. (PAGE), 1876, i., 24.
- Gas-retorts**, cements for (CAPITAINE), 1875, 1301.
- Gas-streams**, apparatus for producing constant and long-continued (NORBLAD), 1874, 765.
- Gastaldite** (STRÜVER), 1877, ii., 119; (DOELTER), 1881, A., 553.
- Gastaldite-eclogite** from Val Tournanche, rutile in (COSSA), 1881, A., 370.
- Gas-tight cloth** (TIEFTRUNK), 1876, i., 136.
- Gastric juice** (CHAPOTEAUT), 1882, A., 1220.  
 acidity of human (RICHTER), 1877, ii., 631.  
 acids of (RICHTER), 1877, ii., 910; 1878, A., 520.  
 source of acids of (MALY), 1875, 92.  
 acid, action of, on the nitrogenous constituents of fodder (STUTZER), 1881, A., 296.  
 abnormal presence of uric acid in (BOUCHERON), 1881, A., 1161.  
 microzymes of (BÉCHANP), 1882, A., 752.  
 digestion of linseed-mucilage with artificial (FUDAKOWSKI), 1877, ii., 911.  
 of the ray (RABUTEAU and PAPILLON), 1873, 1150.
- Gastropoda**, especially *Dolium galea*, formation of free sulphuric acid in (MALY), 1881, A., 298.
- Gas-works**, investigation of several ammonia liquors from (GERLACH), 1873, 302; 1875, 195.
- Gas-works**, analysis and valuation of spent iron oxides from (DAVIS), 1877, ii., 927.
- Gauge-glasses**, corroded (KÄMMERER), 1876, i., 799.
- Gaultherylene** (BIEDERMANN), 1876, i., 704.
- Gaultheria oil**, testing of (ANON.), 1877, ii., 227.
- Gedanite** (HELM), 1879, A., 300, 896.
- Geese**. See under Agricultural Chemistry.
- Gehlenite** from Orawicza (JANOVSKY), 1874, 237, 346.  
 occurrence of, in Saxony (FRENZEL), 1874, 1074.
- Geissler's tubes**. See under Electrochemistry.
- Geissospermine**, and its salts (HESSE), 1878, A., 433; 1880, A., 675.
- Gelatin**, preparation of (HEUZE), 1873, 1070.  
 constitution of (SCHÜTZENBERGER and BOURGEOIS), 1876, ii., 104.  
 dry distillation of (WEIDEL and CIAMICIAN), 1881, A., 295.  
 action of hydrochloric acid on (HORACZEWSKI), 1880, A., 723.  
 action of potassium or ammonium dichromate on (EDER), 1879, A., 911.  
 decomposition of, by pancreas ferments in absence of air (JEANNERET), 1877, ii., 630.  
 fermentation of (FITZ), 1879, A., 664.  
 digestibility of (ETZINGER), 1875, 94.  
 nutritive value of (v. VOIT), 1873, 284; 1875, 94; (ÖRUM and DITZEL), 1881, A., 1049.  
 as a reducing agent (BIZIO), 1877, i., 325.  
 red colouring of (PUSCHER), 1873, 423.  
 jelly as a dialyser (WOODCOCK), 1882, A., 663.  
 blasting- (ABEL), 1879, A., 850.
- Gelatin bromide emulsion** (SCHNAUSS), 1880, A., 929; (EDER), 1882, A., 111; (PLENER), 1882, A., 902.  
 for diapositives (ANON.), 1882, A., 1142.
- Gelose** (MORIN), 1881, A., 403; (GREENISH), 1882, A., 1044.  
 a new substance used for finishing cotton materials (HEILMANN), 1876, i., 931.
- Gelsemine and gelsemic acid** (HOLMES), 1876, i., 941; (SONNENSCHIEIN), 1877, i., 97; (ROBBINS), 1877, ii., 344; (WORMLEY), 1882, A., 1109.

- Gelsemine**, forensic chemical estimation of, in animal liquids and tissues (SCHWARZ), 1882, A., 1141.
- Gelsemium poisoning** (WORMLEY), 1882, A., 1109.
- Gelsemium sempervirens*** (HOLMES), 1876, i., 941; (SONNENSCHNEIN), 1877, i., 97; (ROBBINS), 1877, ii., 344.  
preparation, properties, and recovery, when absorbed, of the important constituents of (WORMLEY), 1882, A., 1109.
- Gentian root**, presence of tannin in (HAGER), 1877, ii., 351; (VILLE), 1877, ii., 897.
- Gentian violet** (ANON.), 1876, ii., 236.
- Gentisic acid**. See 2:5-Dihydroxybenzoic acid.
- Gentisic aldehyde** (2:5-dihydroxybenzaldehyde) (TIEMANN and MÜLLER), 1882, A., 52.
- Gentisin** (HLASIWETZ and HABERMANN), 1875, 572; 1876, ii., 83.
- Geognostico-petrography of South Africa** (COHEN), 1874, 1075.
- Geognosy**, fundamental scientific principles of (ORTU), 1877, ii., 214.
- Geology of Mount Monzoni in South-west Tyrol** (VOM RATH), 1875, 1170.
- German silver**. See Nickel alloys.
- Germination**. See under Agricultural Chemistry.
- Germs**. See Microbes.
- Gersdorffite** (*nickel-glance*), composition of (FRESenius), 1874, 1180.  
cobaltiferous, from Benahanis, Province of Malaga (GENTH), 1881, A., 1110.
- Geysers**. See under Water.
- Ghea-butter** (*shea butter*) (DEITE), 1879, A., 568.
- Gilding and plating solutions**, analysis of (ALLEN), 1877, ii., 224.
- Gilding iron by the dry way**, simplification of the method of (KIRCHMANN), 1873, 418.
- Gilbertite** (FRENZEL), 1874, 447; 1882, A., 473.
- Giuese** (residue in the preparation of sulphur), use of, in agriculture (SESTINI), 1876, i., 879.
- Ginger** (STENHOUSE and GROVES), 1877, i., 553.  
soluble essence of, preparation of (THRESH), 1880, A., 359.  
etheral extract of (THRESH), 1882, A., 626.
- Gingerol** (THRESH), 1882, A., 627.
- Ginilite** (RAMMELSBERG), 1877, ii., 412.
- Gismondite** (*gismondine*) (SCHRAUF), 1878, A., 386; (ROTH), 1881, A., 26.
- "Glairin"** from the springs at Molitg (BÉCHAMP), 1873, 1149.
- Glands**, pyloric, peptic action of the (v. WITTICH), 1873, 515; 1874, 592.
- Glass**, made with phosphate of lime (SIDOT), 1877, ii., 842.  
use of fluorides in the manufacture of (ANON.), 1874, 1185.  
use of heavy spar in the manufacture of (DONATH), 1880, A., 516.  
use of manganese liquors in the manufacture of (ANON.), 1873, 1171.  
use of manganese dioxide in the manufacture of (BONTEMPS), 1874, 718.  
use of natural silicates in the manufacture of (WAGENER), 1882, A., 1245.  
use of soda-waste in the manufacture of (LUNGE), 1876, i., 787.  
use of Glauber's salt in the manufacture of (BENRATH), 1873, 540; (WAGNER), 1875, 1059.  
recovery of sulphur from gypsum and Glauber's salt in the manufacture of (SCHOTT), 1876, ii., 670.  
resulting from the fusion of the ashes of grass, etc., microscopic study of (VÉLAIN), 1881, A., 692.  
refining of (FREMY), 1876, i., 787.  
composition of (SCHWARZ), 1873, 201; (SCHOTT), 1876, i., 788; (WEBER), 1879, A., 754.  
composition of ancient crystal and (PÉLIGOT), 1877, i., 234; 1878, A., 646.  
Chinese, composition of (KALMANN), 1876, ii., 446.  
composition of pressed (BENRATH), 1876, i., 789.  
rule for calculating the composition of (WAGENER), 1882, A., 563.  
mixtures (WAGENER), 1882, A., 1245.  
chemical technology of (ANON.), 1879, A., 1074; (MÜLLER), 1881, A., 323.  
nature of (WAGENER), 1882, A., 563.  
variation of the electric conductivity of, with temperature, density, and chemical composition (GRAY), 1882, A., 680.  
specific inductive capacity of (HOPKINSON), 1881, A., 963.  
variations in the coefficient of expansion of (CRAFTS), 1880, A., 841.  
compressibility of (BUCHANAN), 1878, T., 456.  
crystals in (SCHOTT), 1876, ii., 48.  
crystallisation of (PÉLIGOT), 1874, 543.  
decomposition of (DE LUYNES), 1877, ii., 165.



- Glass**, decomposition of, by boiling water (TOLLENS), 1877, i., 270.  
 changes in, by heating (SALLERON), 1881, A., 5.  
 chemical changes produced during the melting of (SCHOTT), 1876, i., 121.  
 devitrification of (HENRIVAUX), 1873, 244.  
 durability of (WEBER), 1879, A., 754.  
 sudden cracking of (HAGENBACH), 1876, ii., 43.  
 solubility of, in certain reagents (COWPER), 1882, T., 254.  
 impervious to gases (QUINCKE), 1877, ii., 165.  
 annealing of, and the explosion of Prince Rupert's drops (DE LUYNES), 1873, 723.  
 etching on (SIEGWARDT), 1876, ii., 447.  
 etching on, by electricity (PLANTÉ), 1878, A., 348.  
 clear etching on, with hydrofluoric acid (ANON.), 1875, 1299.  
 new method of painting on (MILLER), 1882, A., 127.  
 method of printing and burning-in of names, monograms, etc., on (MILLER), 1882, A., 785.  
 gilding of (SCHWARZENBACH), 1875, 1060.  
 coloured by gold (PAYARD), 1874, 929; (CUMENGE and FUCHS), 1879, A., 509.  
 coloured, spectral analysis of (STEIN), 1875, 412.  
 silvering of (SIEMENS), 1873, 419; (BENRATH), 1882, A., 127.  
 application of glycerol to (PALMIERI), 1882, A., 1256.  
 irisation of (FREMY and CLÉMANDOT), 1877, i., 687.  
 production of opacity in (WEISKOPF), 1873, 657.  
 action of sunlight on (HENRIVAUX), 1873, 463; (GAFFIELD), 1882, A., 352.  
 action of the oxides of nitrogen on, at a high temperature (MORGAN), 1882, A., 361.  
 action of sulphur on (SELEZNEFF), 1882, A., 696.  
 corrosion of (WIBEL), 1873, 740.  
 fusion of, with cryolite, sulphides, and with sulphates (EBELL), 1878, A., 98.  
 cement for (LIESEGANG), 1873, 97.  
 containing alkaline bases only (EBELL), 1878, A., 689, 758.  
 crystallisation of metallic oxides from (EBELL), 1876, ii., 336; 1878, A., 97.  
 analyses of (PRIMKE), 1878, A., 100; (KEHN), 1878, A., 555.
- Glass**, analysis of American moulded (CAPLAN), 1878, A., 683.  
 manufacture of alabaster-, milk-, bone-, cryolite-, and opal- (HOCK), 1877, ii., 946.  
 bone- (FISCHER), 1874, 1115.  
 bottle- (MACAGNO), 1878, A., 757; (BENRATH), 1879, A., 562.  
 calcined (GUHRAUER), 1876, i., 123.  
 copper ruby, and cognate varieties (EBELL), 1875, 485.  
 hardened, or toughened (DE LUYNES and FEIL), 1876, i., 36; (BAUER), 1876, i., 122; (BOURRÉE), 1878, A., 99; (ANON.), 1878, A., 1017.  
 resistance of, to flexure (DE LA BASTIE), 1881, A., 478.  
 hard or elastic (ANON.), 1875, 1060.  
 mirror, composition of various kinds of (DONATH), 1880, A., 516.  
 soluble, preparation of, from fossil meal (CAPITAINE), 1877, i., 757.  
 use of, in the textile industry (GROTHE), 1877, i., 757.  
 application of, for scouring cotton goods (MEYER), 1878, A., 534.  
 dialysis and reactions of (EBELL), 1878, A., 758.  
 yellow, testing of, for the dark rooms of photographers (FOSTER), 1873, 948.
- Glass vessels**, Bohemian, errors arising from the use of, in chemical analysis especially in alkalimetry (TRUCHOT), 1875, 382.
- Glauber's salt**. See Sodium sulphate.
- Glauberite** (OCHSENIUS), 1874, 547; (PFEIFFER), 1882, A., 577.  
 of Pendschab (SCHIMPER), 1878, A., 118.  
 crystallographical and optical examination of (LASPEYRES), 1878, A., 382.  
 and rock-salt, pseudomorphs from Westeregeln near Stassfurt (v. ZEPHAROVICH), 1874, 1074.
- Glaucodote** (LEWIS), 1877, ii., 855.
- Glaucosite** of Antwerp (DEWALQUE), 1875, 871.  
 pseudomorph of, after augite (GEINITZ), 1877, i., 696.
- Glaucophane** (COHEN), 1881, A., 553.  
 and glaucophane-bearing rocks of the Island of Syra (LUEDECKE), 1877, ii., 171.  
 of Zermatt (BODEWIG), 1877, ii., 171.
- Glaze** for cooking vessels, with and without lead (GALLUS), 1878, A., 814.  
 English, for earthenware (SEGER), 1873, 1170.

**Glaze** for common earthenware (ANON.), 1874, 1115.  
 for paper and pasteboard (BAUER), 1882, A., 444.  
 of Roman pottery (KELLER), 1878, A., 618.  
**Glaze-clays**, composition of (ANON.), 1879, A., 87.  
*Gleditschia glabra*, composition of the kernels and husks of the seed of (MOSER), 1880, A., 133.  
**Globularetin**, and **globularia** (HECKEL), 1882, A., 1224.  
**Globulin-substances** in potatoes (ZÖLLER), 1880, A., 723.  
**Paraglobulin** (HAMMARSTEN), 1879, A., 472.  
 preparation of (FREDERICQ), 1882, A., 75.  
**Globulins**. See also Proteids.  
*Gloriosa superba* (WARDEN), 1881, A., 103.  
**Glover Tower**. See Sulphuric acid under Sulphur.  
**Glucinum**. See Beryllium.  
**Gluconic acid** and its salts (GRIESSHAMMER), 1880, A., 795; (BOUTROUX; MAUMENÉ), 1880, A., 863; (REICHARDT), 1880, A., 864.  
**Paragluconic acid** (HÖNIG), 1881, A., 893.  
**Glucoproteins** (SCHÜTZENBERGER), 1879, A., 545; (BLEUNARD), 1881, A., 1047.  
**Glucosamine** (*glycosamine*) hydrochloride (LEDDERHOSE), 1877, i., 64.  
**Glucose**. See under Carbohydrates.  
**Glucosides** (SCHIFF), 1881, A., 610.  
 complex, formation of (SCHIFF), 1880, A., 126.  
 spectra of (HOCK), 1882, A., 349.  
 electrolysis of (COPPOLA), 1878, A., 677.  
 decomposition of, by heat (SCHIFF), 1881, A., 439.  
 of buckthorn berries (LIEBERMANN and HOERMANN), 1879, A., 39.  
 in the flowers of *Cichorium Intybus* (NIETZKI), 1877, i., 477.  
 from ivy (*Hedera Helix*) (v. ILARTSEN), 1876, i., 613; (VERNET), 1881, A., 440.  
 from white mustard seed (WILL and LAUBENHEIMER), 1880, A., 265.  
 of saliretin (MICHAEL), 1879, A., 1038.  
 bile and sulphuric acid as a test for (ALMQUIST), 1876, i., 780.

## GLUCOSIDES—

**Adonidin** (CERVELLO), 1882, A., 1126.

## GLUCOSIDES—

**Æsculin**, composition of (LIEBERMANN and KNIETSCH), 1881, A., 107.  
 action of heat on (SCHIFF), 1881, A., 439.  
 is gelsenic acid identical with? (WORMLEY), 1882, A., 1109.  
 acetyl-derivatives of (SCHIFF), 1881, A., 180.  
 dibrom-, and its acetyl-derivatives (LIEBERMANN and KNIETSCH), 1881, A., 108.  
**Æsculetin** (LIEBERMANN and MASTBAUM), 1881, A., 610.  
 composition of (LIEBERMANN and KNIETSCH), 1881, A., 107.  
 dibrom- (LIEBERMANN and KNIETSCH), 1881, A., 108.  
**Amygdalin**, electrolysis of (COPPOLA), 1878, A., 678.  
**Apiin** (v. GERICHTEN), 1876, ii., 533; (WHITNEY), 1880, A., 413.  
**Aralin** (HOLDEN), 1881, A., 106.  
**Arbutin** (HLASIWETZ and HABERMANN), 1876, i., 78; ii., 198.  
 constitution of (SCHIFF), 1881, A., 610.  
 action of heat on (SCHIFF), 1881, A., 439.  
 nitr- (HLASIWETZ and HABERMANN), 1876, i., 80.  
**Aurantiin**. See Naringin.  
**Camellin** (MARTIN and KATZUJAMA), 1879, A., 330.  
**Cerebrin** (*phrenosin*) (GOBLEY), 1874, 908; (PARCUS), 1882, A., 235; (THUDICHUM), 1882, A., 537.  
 purification of (BOURGOIN), 1874, 993.  
**Coniferin** (SINGER), 1882, A., 1124.  
 action of acetic anhydride on, and on some of its derivatives (TIEMANN and NAGAI), 1876, i., 77.  
 conversion of, into vanillin (TIEMANN and HAARMANN), 1874, 895.  
**Convolvulin** (STEVENSON), 1880, A., 717.  
**Cyclamin** (MUTSCHLER), 1877, ii., 903.  
 splitting up of, into glucose and mannitol (DE LUCA), 1879, A., 70.  
**Diacetylæsculetin** (SCHIFF), 1881, A., 180.  
 di- and tri-bromo- (LIEBERMANN and KNIETSCH), 1881, A., 107.  
**Digitalein**, **digitalin**, **digitaliresin**, **digitonin**, and **digitoxin** (SCHMIEDERBERG), 1875, 1266.

## GLUCOSIDES—

- Digitalin**, crystallised (FLÜCKIGER), 1874, 701.  
 extraction of crystallized (NATIVELLE), 1875, 276.  
 chemical nature of (KOSMANN), 1875, 650.  
 absorption spectra of solutions of (HOCK), 1882, A., 349.  
 detection of (BRUNNER), 1873, 1062.
- Dulcamarin**, bitter constituent of *Solanum Dulcamara* (GEISSLER), 1876, i., 714.
- Encephalin** [(PARCUS), 1882, A., 235.
- Fisetin** (Koch), 1873, 72.
- Fragarianin** and **fragarin** (PHIPSON), 1878, A., 982.
- Glycodruse** and **glycolignose** (CROSS and BEVAN), 1882, T., 106.
- Glycyphyllin** (WRIGHT and RENNIE), 1881, T., 240.
- Glycyrrhetin** (WESELSKY and BENEDIKT), 1877, i., 96.
- Glycyrrhizic acid** and its salts (SESTINI), 1879, A., 727; (HABERMANN), 1879, A., 1040; 1880, A., 671.
- Glycyrrhizin** (GRIESSMAYER), 1874, 170; (ROUSSIN), 1876, i., 62; (HABERMANN), 1877, ii., 500; 1879, A., 1040; 1880, A., 671; (SESTINI), 1878, A., 740; 1879, A., 727.
- Helleboretin** (GREENISH), 1880, A., 719; (HERLANT), 1882, A., 1125.
- Hesperetin** and **hesperetol** (TIEMANN and WILL), 1881, A., 739.
- Hesperidin**. See **Naringin**.
- Homocerebrin** (PARCUS), 1882, A., 235.
- Ibotin** (MARTIN), 1879, A., 330.
- Indican** (*plant indican*) (SCHUNCK), 1878, A., 885.
- ψ-Indican** (WARDEN), 1882, A., 308.
- Jalapin** (STEVENSON), 1880, A., 717.
- Kellin** (MUSTAPHA), 1879, A., 1041.
- Lupinin** and **lupigenin** (SCHULZE and BARBIERI), 1879, A., 467.
- Melanthin** and **melanthigenin** (GREENISH), 1880, A., 719.
- Methylarbutin** (SCHIFF), 1881, A., 610.  
 synthesis of (MICHAEL), 1882, A., 174.
- Murrayin** (HOFFMANN), 1876, ii., 421.

## GLUCOSIDES—

- Naringin** (*aurantiin*; *hesperidin*) and its derivatives (PATERNO and BRIOSI), 1876, i., 709; (HOFFMANN), 1876, ii., 420; 1879, A., 468; (TIEMANN and WILL), 1881, A., 739.
- Parillin** (FLÜCKIGER), 1878, A., 327.
- Persicin** (ROTHER), 1878, A., 801.
- Phlobaphen** and its derivatives (BÖTTINGER), 1880, A., 650.
- Phlorizin** and **phloretin** (LOEWE), 1876, i., 710.
- Phlorizin**, action of heat on (SCHIFF), 1881, A., 439.
- Phrenosin**. See **Cerebrin**.
- Podophyllin** (GUARESCHI), 1880, A., 479.  
 constituents of (PODWYSSOZKI), 1882, A., 976.
- Populin** (*benzoylsalicin*), dextrose from (V. LIPPMANN), 1880, A., 29.
- Psychosin** (THUDICHUM), 1882, A., 537.
- Quebrachitanic acid** (ARATA), 1881, A., 1152.
- Quercitrin** and **quercetin**, occurrence of, in catechu and sumach (LOEWE), 1874, 171; 1876, i., 708.  
 derivatives of (LIEBERMANN and HAMBURGER), 1879, A., 944.
- Rhamnetin**, formula of, and *di-bromo-* (LIEBERMANN and HOERMANN), 1879, A., 271.  
 fusion of, with potash (SMORAWSKY), 1880, A., 53.
- Salicin**, electrolysis of (COPPOLA), 1878, A., 677.  
 action of heat on (SCHIFF), 1881, A., 439; (PARKER), 1882, A., 303.  
 solubility of (PARKER), 1882, A., 303.
- Saponin** of sarsaparilla (FLÜCKIGER), 1878, A., 327.
- Shikimin** (EIJKMAN), 1881, A., 918.
- Sinalbin** and its thiocarbimide (WILL and LAUBENHEIMER), 1880, A., 265.
- Sophorin** and **sophoretin** (FÜRSTER), 1882, A., 976.
- Teucrin** (OGGIALORO-TODARO), 1879, A., 728.
- Thevetin** (WARDEN), 1882, A., 803.
- Tribenzoylrhamnetin** (LIEBERMANN and HOERMANN), 1879, A., 272.
- Urechitin**, **urechitoxin** and **urechitoxetin** and their reactions (BOWREY), 1878, T., 252.

## GLUCOSIDES—

- Xanthorhamnin** and its derivatives (LIEBERMANN and HOERMANN), 1879, A., 39, 271.
- Glue**, a new (ANON.), 1873, 306.  
 manufacture of (TERNE), 1877, i., 122.  
 sugar-lime as a solvent for (PUSCHER), 1873, 306.  
 which resists the action of water (ANON.), 1873, 1072.  
 a substitute for (ANON.), 1882, A., 444.
- Glutamic acid** (*amidoglutaric acid*) and its salts (ILASIWETZ and HABERMANN), 1873, 512; (HABERMANN), 1876, i., 906; (SCHÜTZENBERGER), 1879, A., 545.  
 from the juice of vetch-seeds (v. GORUP-BESANZ), 1877, ii., 739.  
 formation of, from animal as well as from vegetable proteids (ILASIWETZ and HABERMANN), 1874, 379.
- Glutamine**, estimation of, in plants (SCHULZE and BARBIERI), 1877, ii., 324; 1881, A., 313.
- Glutanic acid**. See Hydroxyglutaric acid.
- Glutaric acid** (*n-pyrotartaric acid*), and its salts (REBOUL), 1876, ii., 286, 507; 1879, A., 133; (MARKOWNIKOFF), 1877, i., 62; (DITTMAR), 1877, i., 188.  
 synthesis of (WISLICENUS and LIMPACH), 1878, A., 783.  
 transformation-products of (BERNHEIMER), 1882, A., 1189.  
 conversion of, into *dibromomethylsuccinic* and *dibromosuccinic* acids (REBOUL and BOURGOIN), 1877, ii., 592.
- Glutaric anhydride** (MARKOWNIKOFF), 1878, A., 30; (BÖTTINGER), 1878, A., 32.
- Glutaric chloride** (REBOUL), 1879, A., 134.
- Glutarimide**, and its derivatives (BERNHEIMER), 1882, A., 1190.
- Gluten** (WEYL and BISCHOFF), 1880, A., 482; 1882, A., 537.  
 amount of fat in commercial (RITTHAUSEN), 1878, A., 239.  
 aspartic acid a product of the artificial digestion of, by the pancreatic gland (v. KNIRIEM), 1876, i., 724.  
 estimation of, in flour (BÉNARD and GIRARDIN), 1881, A., 1177.
- Gluten-biscuit** and certain amylaceous foods, comparative analyses of (BOUS-SINGAULT), 1876, i., 765.
- Gluten-bread**, analyses of (BIRNBAUM), 1881, A., 67.
- Glutimic acid** (SCHUTZENBERGER), 1879, A., 545.
- Glutimide** (HABERMANN), 1876, i., 906.
- Glutin**, specific gravity of (DITTMAR), 1873, 283.
- Glyceraldehyde** and "glyceraldehyde-hydrate" (NENCKI and SIEBER), 1882, A., 1308.
- Glycereins** (REICHL), 1880, A., 426.
- Glyceric acid** ( *$\alpha\beta$ -dihydroxypropionic acid*) (ERLENMEYER), 1880, A., 544.  
 preparation of (MULDER), 1877, ii., 311.  
 synthesis of, from chlorolactic acid (FRANK), 1881, A., 416.  
 dry distillation of (BÖTTINGER), 1877, ii., 443.  
 action of dehydrating agents on (ERLENMEYER), 1881, A., 417.  
 *$\alpha\beta$ -dichloropropionic* acid from (WERIGO and WERNER), 1874, 242; (WERIGO and MELIKOFF), 1878, A., 289; 1879, A., 521.  
 production of fumaric acid and inactive malic acid from (WERIGO and TANATAR), 1875, 357.  
 calcium salt of, fermentation of (FITZ), 1879, A., 664; 1880, A., 819.
- iso***Glyceric acid**. See Pyruvic acid.
- Glyceric anhydride** (SOKOLOFF), 1878, A., 569.
- Glyceric chloranhydride**, decomposition products of (WERIGO and OKULITSII), 1873, 1020.
- Glyceride**, disodium, preparation of (LOEBISCH and LOOSS), 1882, A., 377.
- Glycerides**, metallic (PULS), 1877, ii., 302.
- Glycerol** (*glycerin; propenyl alcohol*), crystallised (ROOS), 1876, i., 651; (HENNINGER), 1876, i., 695.  
 amount of, liberated on the saponification of fats (v. DER BECKE), 1880, A., 762.  
 recovering, from spent soap leys (FLEMING), 1882, A., 782.  
 synthesis of (LIEBEN and ZEISEL), 1881, A., 145.  
 absorption-bands of (SCHÖNN), 1878, A., 693.  
 refractive indices of (LENZ), 1880, A., 757.  
 electrolysis of (RENARD), 1880, A., 25; (BARTOLI and PAPASOGLI), 1882, A., 407.  
 thermic constants of (BERTHELOT), 1879, A., 874.



**Glycerol** (*glycerin*; *propenyl alcohol*),  
 heat of combustion of (LUGININ),  
 1880, A., 604.  
 heat of formation of (RAMSAY), 1879,  
 T., 696, 702.  
 boiling point of (OPPENHEIM and  
 SALZMANN), 1875, 442.  
 specific gravities of (LENZ), 1880, A.,  
 757.  
 absorption of moisture by (WILLIAMS),  
 1881, A., 1120.  
 new property of (GODEFFROY), 1875,  
 748.  
 evaporation of (COUTTOLENC), 1881,  
 A., 1084.  
 fermentation of (FITZ), 1877, i., 226;  
 ii., 214; 1878, A., 241; 1879, A.,  
 664; 1880, A., 819; 1882, A., 1121;  
 (HOPPE-SEYLER), 1881, A., 82.  
 influence of, on the processes of fer-  
 mentation (PLÓSZ; MUNK), 1878,  
 A., 526.  
 action of aluminium iodide on (HODG-  
 KINSON), 1877, ii., 300; (GLAD-  
 STONE and TRIBE), 1881, T., 10.  
 action of hydrochlorides of the amines  
 and of aniline on (PERSOZ), 1878,  
 A., 966.  
 action of ammonium chloride on  
 (ETARD), 1881, A., 708.  
 action of baryta on (DESTREM), 1880,  
 A., 712.  
 action of electrolytic oxygen on  
 (RENARD), 1875, 1249; 1876, ii.,  
 64.  
 action of fused potash on (HERTER),  
 1878, A., 966.  
 action of soda on (FERNBACH), 1881,  
 A., 145.  
 action of sodium sulphide on  
 (SCHLAGDENHAUFFEN), 1873, 868.  
 oxidation of, by nitric acid (PRZY-  
 BYTEK), 1881, A., 402, 1021.  
 oxidation of, by potassium perman-  
 ganate (MORAWSKI and STINGL),  
 1879, A., 205; (CAMPANI and BIZ-  
 ZARRI), 1881, A., 256; 1882, A.,  
 818.  
 reducing action of, on silver salts,  
 and its application to silvering  
 glass (PALMIERI), 1882, A., 1256.  
 retarding action of (DUNN), 1877, ii.,  
 730.  
 conversion of, into acetone (LANGE),  
 1873, 627; (TAWILDAROFF), 1880,  
 A., 235.  
 change of, into glucose (KOSMANN),  
 1877, ii., 876; (LIEBERMANN),  
 1878, A., 287.  
 n-propyl alcohol from (FITZ), 1880,  
 A., 372; (DA SILVA), 1881, A., 1123.

**Glycerol** (*glycerin*; *propenyl alcohol*),  
 alleged power of, to replace sugar  
 (USTIMOWITSCH), 1877, i., 220.  
 as a solvent (KLEVER), 1873, 47.  
 solubility of metallic oleate and of  
 calcium sulphate in (ASSELIN),  
 1873, 875.  
 solubility of plumbic chloride in  
 (PIESSE), 1874, 505.  
 new application of, in the laboratory  
 (CHURCH), 1877, ii., 244.  
 application of, in analysis (DONATH),  
 1879, A., 178.  
 nutritive value of (MUNK), 1881, A.,  
 114.  
 action of, on the animal organism  
 (PLÓSZ), 1878, A., 525.  
 influence of, on proteid tissue change  
 (LEWIN), 1880, A., 817.  
 influence of, on the decomposition of  
 proteids in the animal body (TSCHIR-  
 WINSKY), 1880, A., 817.  
 power of, to diminish the activity of  
 astringents (SHUTTLEWORTH), 1876,  
 i., 411.  
 and lime, combination of, and  
 its pharmaceutical application  
 (CARLES), 1874, 722.  
 derivatives (BRACKEBUSCH), 1874,  
 241; (HENRY), 1874, 351, 1078;  
 1875, 345; (HARRIOT), 1877, ii.,  
 301; 1878, A., 656; 1879, A.,  
 1029.  
 constitution of (HARTENSTEIN),  
 1873, 1217.  
 analysis of (CHAMPION and PELLET),  
 1873, 1165; 1874, 713.  
 detection of (SENIER and LOWE),  
 1878, T., 438; (BARBSCHIE), 1882,  
 A., 104; (DONATH and MAYR-  
 HOFER), 1882, A., 557.  
 estimation of (LENZ), 1880, A., 757;  
 (TSCHIRWINSKY), 1880, A., 817;  
 (MORAWSKI), 1881, A., 145;  
 (MUTER), 1881, A., 1174; (ANON.),  
 1882, A., 898.  
 estimation of, in beer (GRIESSMAYER),  
 1878, A., 449; (CLAUSNIZER), 1881,  
 A., 470; 1882, A., 557.  
 estimation of, in wine (REICHARDT),  
 1877, ii., 939; 1878, A., 93; (NEU-  
 BAUER and BORGMANN), 1879, A.,  
 404; (REYNAUD), 1880, A., 512;  
 (BORGMANN), 1882, A., 1235.  
**Glycerolphosphoric acid** and its salts,  
 as obtained from the phosphorised  
 constituents of the brain (THUDI-  
 CHUM and KINGZETT), 1876, ii.,  
 20.  
 in normal human urine (SOTNIS-  
 CHEWSKY), 1881, A., 631.

- Glyceryltriacetate** (*triacetin*) (PRUNIER), 1878, A., 212; (MARKOWNIKOFF), 1881, A., 146; (KABLUKOFF), 1881, A., 408.  
 preparation of (FITTIG and SCHMIDT), 1880, A., 312.  
 borate and boride (COUNCLER), 1879, A., 622.  
 dibromohydrin (*s-dibromoisopropyl alcohol*), etherification of (MENSCHUTKIN), 1882, A., 817.  
 dichlorohydrin (*dichloroisopropyl alcohol*), preparation of (CLAUS), 1873, 1120.  
 and its oxidation products (MARKOWNIKOFF), 1874, 241; 1881, A., 1120.  
 action of ammonia on (CLAUS), 1873, 1121.  
 action of aniline on (CLAUS), 1875, 770; (SCHIFF), 1875, 1033.  
 action of bromine on (GRIMAUZ and ADAM), 1880, A., 99; (CLAUS and LINDHORST), 1880, A., 862.  
 action of ethylic chloroformate on, in presence of sodium amalgam (KELLY), 1879, A., 305.  
 formation of allylene dichloride by the dehydration of (HARTENSTEIN), 1873, 1218.  
 diformate (*diformin*) (VAN ROMBURGH), 1882, A., 378; (LORIN), 1882, A., 389.  
 diiodohydrin (*diiodoisopropyl alcohol*) (CLAUS), 1873, 1121.  
 nitrate (HANRIOT), 1879, A., 449.  
 trinitrate (*nitroglycerin*; *nitroglycerol*) (BOUTMY), 1879, A., 1032.  
 properties of (KERN), 1875, 748.  
 heat of formation of (SARRAU and VIEILLE), 1881, A., 969.  
 specific gravity of (HERMANN), 1878, A., 699.  
 estimation of, in dynamite (CHAMPION and PELLER), 1873, 1165; (HEMPER), 1881, A., 472.  
 in dynamite, estimation of nitrogen in (SAUER and ADOR), 1878, A., 165, 611.  
 oxide. See Acetylcarbinol, anhydride of.  
 salicylate (GÖTTIG), 1878, A., 318.  
 xanthates. See Glyceryldithiocarbonic acid, and its salts.  
**Glycerylboric acid**, calcium and sodium salts of (LE BON), 1882, A., 1244.  
**Glyceryldithiocarbonic acid** (*glyceryl xanthates*) and its salts (LOEBISCH and LOOSS), 1882, A., 164.  
**Glyceryltrisulphuric acid** (CLAËSSON), 1879, A., 1033.  
**Glycidamine** (CLAUS), 1873, 1121.  
**Glycide** (*epihydrin alcohol*) (V. GEGERFELT), 1875, 879; (HANRIOT), 1879, A., 449, 1032; (BRESLAUER), 1880, A., 29.  
 dichloro-. See Propylene,  $\alpha\beta$ -dichloro-.  
**Glycidic acid** (*oxyacrylic acid*; *oxypropionic acid*) (ERLENMEYER), 1880, A., 544; (MELIKOFF), 1880, A., 626, 800.  
 constitution of (MELIKOFF), 1880, A., 800.  
 zinc salt of (MELIKOFF), 1881, A., 713.  
**Glycine**. See Glycocine.  
**Glycocholic acid**, preparation of, from ox-bile (HÜFNER), 1879, A., 949; 1882, A., 874.  
 some properties of (EMICH), 1882, A., 1218.  
 estimation of, in bile (KÜLZ), 1873, 536.  
**Paraglycocholic acid** (EMICH), 1882, A., 1220.  
**Glycocine** (*glycine*; *glycocoll*; *amido-acetic acid*) (LJUBAVIN), 1882, A., 828.  
 in the muscular tissue of *Pecten irradians* (CHITTENDEN), 1875, 1275.  
 conversion of ethylic cyanoformate into (ANGELEIS), 1875, 754.  
 formation of, from ethylic nitracetate (DE FORCRAND), 1879, A., 621.  
 synthesis of (EMMERLING), 1874, 253.  
 action of heat on (MEYER), 1878, A., 294.  
 reactions of (ENGEL), 1875, 885, 1256; 1876, i., 943.  
 action of, on cholic acid (LANG), 1877, i., 481.  
 oxidation of (DRECHSEL), 1876, i., 701.  
 production of oxamic acid by the oxidation of (ENGEL), 1875, 251, 357.  
 compound of heptioic aldehyde, with the sulphite of (*ocnanthamidoacetic sulphite*) (SCHIFF), 1882, A., 304.  
 derivatives (KRAUT), 1876, i., 61; ii., 625.  
 silver salt of, action of benzoic chloride on (CURTIUS), 1881, A., 1144.  
**Glycocoll**. See Glycocine.  
**Glycocynamine**, synthesis of (NENCKI and SIEBER), 1879, A., 70.  
**Glycodrupose** (CROSS and BEVAN), 1882, T., 106.  
**Glycogen**. See under Carbohydrates.  
**Glycogenesis**, vegetable (JODIN), 1878, A., 239.  
 artificial suspension of, in living animals (LUCHSINGER), 1876 i., 949.

- Glycol.** See Ethylenic glycol.  
 bromhydrin. See Ethylic alcohol, brom-.  
 chlorhydrin. See Ethylic alcohol, chlor-.
- Glycols,** preparation of (ELTEKOFF), 1873, 1016.  
 action of water on (NEVOLÉ), 1877, i., 58.  
 influence of isomerism of, on the formation of their acetates (MENSCHUTKIN), 1881, A., 144.
- Glycoldisulphuric acid,** and its salts (CLAËSSON), 1879, A., 1033.
- Glycoleines** (ROTH), 1882, A., 1194.
- Glycolethylamide** (NORTON and TCHERNIAC), 1878, A., 775.
- Glycoline,** and its derivatives (ETARD), 1881, A., 708.
- Glycolines** (ROTH), 1882, A., 1194.
- Glycollic acid** (*hydroxyacetic acid*) (FAHLBERG), 1874, 142; (DEMARÇAY), 1878, A., 661.  
 transformation of acetic acid into (CAZENEUVE), 1880, A., 32.  
 formation of, from tartaric acid (BOUCHARDAT), 1879, A., 916.  
 preparation of (FITTIG), 1877, i., 59; (CROMMYDIS), 1877, i., 454; (THOMSEN), 1880, A., 379.  
 preparation of, from sugar (KILIANI), 1881, A., 251.  
 etherification of (MENSCHUTKIN), 1882, A., 486.  
 calcium salt of (CARIUS), 1874, 786.  
 preparation of hydrous (FITTIG), 1875, 444.  
 crystallized, amount of water contained in (BÖTTINGER), 1879, A., 522.  
 cadmium derivative of (CLAËSSON), 1877, ii., 596.  
 thio-. See Thioglycollic acid.
- Glycollic acids,** substituted (SENFF), 1881, A., 1127.
- Glycollide** (NORTON and TCHERNIAC), 1878, A., 775.
- Glycollylthiocarbamide.** See Thiohydantoin.
- Glycolphenylamide** (NORTON and TCHERNIAC), 1878, A., 775.
- Glycolylphenylguanidine.** See Phenylguanidoacetic acid.
- Glycosalicyl.** See Helicin.
- Glycosamine.** See Glucosamine.
- Glycosine** (*diglyoxaline*) (WYSS), 1877, i., 299; 1878, A., 23.
- Glycuronic acid** (v. MERING), 1882, A., 952.
- Glyeuvic acid** and its salts (BÖTTINGER), 1879, A., 524.
- Glycyphyllin** (WRIGHT and RENNIE), 1881, T., 240.
- Glycyrrhetin** (WESELSKY and BENEDIKT), 1877, i., 96; (HABERMANN), 1880, A., 671.
- Glycyrrhizic acid,** and its salts (HABERMANN), 1879, A., 1040.  
 action of dilute sulphuric acid on (HABERMANN), 1880, A., 671.  
 ammonium salt of (HABERMANN), 1879, A., 1040.  
 barium and calcium salts of (SESTINI), 1879, A., 727.
- Glycyrrhizin** (GRIESSMAYER), 1874, 170; (ROUSSIN), 1876, i., 62; (HABERMANN), 1877, ii., 500; 1879, A., 1040; 1880, A., 671; (SESTINI), 1878, A., 740; 1879, A., 727.
- Glyoxal** (LJUBAVIN), 1876, i., 912; 1882, A., 821; (WYSS), 1877, i., 299; 1878, A., 23.  
 action of, on benzidine and on *m*-tolylenediamine (SCHIFF), 1878, A., 688.  
 a condensation-product of (SCHIFF), 1874, 570.
- Glyoxalethylene.** See Methylglyoxaline.
- Glyoxaline** (LJUBAVIN), 1876, i., 912; 1882, A., 821; (WYSS), 1877, i., 299; 1878, A., 23; (GOLDSCHMIDT), 1882, A., 166; (WALLACH), 1882, A., 821.  
 constitution of (RADZISZEWSKI), 1882, A., 1064.  
 silver salt and hydrobromide of, and tribromo-, and nitroso- (WYSS), 1878, A., 24.
- Glyoxilin** (ABEL), 1879, A., 850.
- Glyoxylic acid** (BÖTTINGER), 1877, ii., 587, 879; 1879, A., 619; 1880, A., 621; (OTTO and BECKURTS), 1881, A., 1030.  
 preparation of (PERKIN), 1877, ii., 90.  
 constitution of (PERKIN), 1877, ii., 102; (OTTO and BECKURTS), 1881, A., 1030.  
 action of ammonia on (PERKIN), 1877, ii., 99.  
 action of alcoholic ammonia on (BÖTTINGER), 1880, A., 622.  
 colouring matter from the action of ammonia on (BÖTTINGER), 1880, A., 622.  
 action of aniline on (BÖTTINGER), 1879, A., 51; 1880, A., 622.  
 action of hydrocyanic and hydrochloric acids on (BÖTTINGER), 1877, ii., 587.  
 action of hydrogen sulphide on (BÖTTINGER), 1877, ii., 588; 1880, A., 621.

- Glyoxylic acid**, behaviour of, with potash (BÖTTINGER), 1881, A., 155.  
 calcium salts of (BECKURTS and OTTO), 1881, A., 575.  
 amido-, ammonium salt of (BÖTTINGER), 1879, A., 619; 1880, A., 621.
- Glyoxylic diureide**. See Allantoin.
- Glyoxylcarbamide** (MEDICUS), 1875, 556.  
 decomposition of (MEDICUS), 1877, ii., 599.
- Gmelinite** from Nova Scotia (HOWE), 1877, ii., 719.
- Gneiss** (SCHUMACHER), 1881, A., 698.  
 solvent action of gypsum on (COSSA), 1873, 1202.  
 composition of (RICCIARDI), 1882, A., 1177.  
 of the Alps (STUDER), 1874, 240.  
 of Mantiqueira, Brazil, rock interstratified in (GORCEIX), 1876, ii., 56.  
 of the Morvan, sillimanite in (MICHEL-LÉVY), 1881, A., 1005.  
 of the North-Eastern Schwarzwald and its relationship to the mineral veins (KILLING), 1879, A., 443.  
 red, of the Saxon Erzgebirge (CREDNER), 1879, A., 361.
- Gnoscopine** (T. and H. SMITH), 1878, A., 987.
- Goa powder**, chrysarobin in (LIEBERMANN and SEIDLER), 1879, A., 326.
- Goats' milk**. See Milk under Agricultural Chemistry.
- Göthite**, from Adair Co., Missouri (BROADHEAD), 1877, ii., 713.  
 artificial pseudomorph of (KELLER), 1882, A., 576.
- Gold**, native (CHURCH), 1874, 879; (FLIGHT), 1880, A., 707.  
 from Cornwall (CHURCH), 1875, 737.  
 association of, with scheelite, in Idaho, U.S. (SILLIMAN), 1877, ii., 713.  
 occurrence of, in Persia, Russia, and Silesia (ANON.), 1881, A., 769.  
 nugget from South America (ATTWOOD), 1879, T., 427.  
 occurrence of, in certain minerals from the United States (CHAPER), 1881, A., 687.  
 from Vancouver Island, and from West Africa (WIBEL), 1873, 1108.  
 from Virginia (PORCHER), 1882, A., 20.  
 from Vöröspatak (POŠERNÝ), 1875, 1244; (VOM RATH), 1877, ii., 279.  
 nuggets, formation of, in drift (SKEY), 1875, 241.
- Gold** in pyrites (SCHWARZ), 1876, i., 890; (CUMENGE and FUCHS), 1879, A., 509.  
 extraction of, from copper pyrites (CLAUDET), 1873, 97; (DIXON), 1879, A., 288.  
 extraction of, by means of chlorine (ANON.), 1874, 720.  
 dispersed in sulphides, amalgamation of (ANON.), 1882, A., 120.  
 recovering of, from toning baths (HAUGK), 1878, A., 178.  
 extraction of, from sulphuretted ores (ANON.), 1881, A., 769.  
 purification of argentiferous, by means of chlorine (ANON.), 1876, i., 968.  
 and its compounds, thermochemical investigations on (THOMSEN), 1876, ii., 374.  
 artificial crystals of (CHESTER), 1878, A., 938.  
 expelled, influence of surfusion on the molecular arrangement of (VAN RIEMSDIJK), 1880, A., 773.  
 molecular, colour of (STEIN), 1873, 342.  
 oxidation of, by galvanic action (BERTHELOT), 1880, A., 158.  
 oxidation of, by oxygen in presence of water (SKEY), 1876, ii., 608.  
 Nobili's rings on (SCHIEL), 1877, i., 677.  
 alleged nuclear action of, upon gold reduced from solution by organic matter (SKEY), 1875, 133.  
 use of potassium cyanide in milling (SKEY), 1876, ii., 588.  
 electrodeposition of (EIERMAYER), 1878, A., 178.  
 dull, cleaning of (ANON.), 1882, A., 1145.  
 "flashing" in assays of (VAN RIEMSDIJK), 1880, A., 693; 1881, A., 769.
- Gold alloys** (KERN), 1878, A., 354.  
 Japanese (KALISCHER), 1875, 922.  
 production of, by wet processes (SKEY), 1875, 241.  
 with mercury (KASANZEFF), 1878, A., 937; (CHESTER), 1878, A., 938.  
 with platinum, coating of mirrors with (ANON.), 1874, 928.
- Gold and zinc couple** (GLADSTONE and TRIBE), 1879, T., 575.
- Gold arsenide** (DESCAMPS), 1878, A., 705.  
 chloride, spectrum of (LECOQ DE BOISBAUDRAN), 1874, 217.  
 action of charcoal on a solution of (KÖNIG), 1882, A., 809.



- Gold chloride**, reduction of, by hydrogen in presence of platinum (TOMMASI), 1880, A., 705.  
 aurous chloride (LEUCHS), 1873, 245.  
 auric chloride and hydrogen chloride, amount of water in (THOMSEN), 1878, A., 13.  
 chlorides and bromides (THOMSEN), 1876, ii., 485.  
**Gold hydroxide** (THOMSEN), 1876, ii., 485.  
 sulphides (ANON.), 1875, 492.  
 and silver telluride (*krennerite*) from Nagyag (SCHARIZER), 1882, A., 581.  
**Gold**, cyanogen-compounds of (LINDBOM), 1878, A., 131.  
**Gold, detection, estimation, and separation**:—  
 assays (RÖSSLER), 1873, 295; (CUMENGE and FUCHS), 1879, A., 509.  
 precipitation of (WEISKOPF), 1874, 297.  
 precipitation of, by hydrogen (RUSSELL), 1874, 11.  
 a new test for (KERN), 1876, i., 750.  
 estimation of, in antimony-regulus in presence of arsenic, copper, iron, and zinc (GAWALOWSKI), 1878, A., 245.  
 estimation of, by quartation with cadmium (KRAUS), 1880, A., 679.  
 separation of, from silver chloride (LEIBUS), 1873, 728.  
**Gold-bath** (DURAND), 1877, ii., 235.  
**Gold-coinage**, alloys employed for (PELIGOT), 1873, 1067.  
**Gold-lined capsules and crucibles** (SMITH), 1875, 480.  
**Gold lace and silver lace**, polishing of (ANON.), 1874, 1118.  
**Gold plate** for verifying the composition of the coinage (ROBERTS-AUSTEN), 1874, 199.  
**Gold-purple**. See Purple of Cassius.  
**Gold varnish**, coating of brass and bronze objects with (ANON.), 1875, 1303.  
**Golden seal**. See *Hydrastis canadensis*.  
**Gombo**, manufacture of paper from, and other industrial applications of this plant (LANDRIN), 1875, 387.  
**Goosefoot**, white, composition of (STORER and LEWIS), 1879, A., 821.  
**Goslarite** (FRENZEL), 1876, i., 50.  
 See also Zinc sulphate.  
**Gourds**, albuminoids of the seeds of (BARBIERI), 1879, A., 272.  
 See also under Agricultural Chemistry.  
**Grain**, function of sulphurous acid when used for the saccharification and alcoholisation of (v. HEMILIAN and MELNIKOFF), 1873, 304.  
 gelatinised, for brewing (BERSCH), 1882, A., 1337.  
 methods of analysing (PILLITZ), 1873, 1061.  
 See also under Agricultural Chemistry.  
**Graminaceæ**. See under Agricultural Chemistry.  
**Graminite** (KENGOTT), 1879, A., 31.  
**Graminivora**, loss of substance experienced by starving (RUBNER), 1882, A., 416, 749.  
**Grammatite**. See Tremolite.  
**Granatine** (DURAND), 1879, A., 170.  
**Granite** (SCHUMACHER), 1881, A., 698.  
 solvent action of gypsum on (COSSA), 1873, 1202.  
 composition of (RICCIARDI), 1882, A., 1177.  
 of the Alps (STUDER), 1874, 240.  
 Irish, microscopic structure of (HULL), 1874, 1075.  
 of the granulite formation of Saxony (CREDNER), 1876, i., 198.  
 and aluminous slate of Barr-Andlau, chemical examination of the contact zones of the (UNGER), 1877, ii., 413.  
**Granite-porphry** of Beucha, near Leipzig (KALKOWSKY), 1879, A., 27.  
 of Lower Silesia (LIEBISCH), 1879, A., 29.  
**Granite-porphyrtes**, mineralogical and chemical composition of the (BARANOWSKI), 1875, 622.  
**Granitic quartz-blocks** of the Sierra de Cordoba, South America, minerals of the (STELZNER), 1874, 668.  
**Granulites**, genesis of, with special reference to the granulite formation of Saxony (SCHEERER), 1874, 452.  
 of Saxony, olivine, serpentine, and eclogite from the (DATHE), 1876, ii., 387, 612.  
 Saxon, occurrence of titanium minerals in (LEHMANN), 1882, A., 580.  
**Granulose** (BROWN and HERON), 1879, T., 610.  
**Grape juice**, composition of (BELL), 1882, A., 81.  
**Grape sugar**. See Dextrose under Carbohydrates.  
**Grapes**. See under Agricultural Chemistry.

- Graphite** (RAMMELSBERG), 1873, 732; (STINGL), 1873, 849.  
 of Mugrau, Bohemia, some minerals accompanying the (SCHRAUF), 1877, i., 581; ii., 859.  
 from Split Rock Plumbago Mine, New Brunswick (HOFFMANN), 1881, A., 545.  
 from Siberia, composition of (KERN), 1876, i., 350.  
 from Ducktown, Tennessee (DUDLEY and CLARKE), 1881, A., 989.  
 in dolerite, from Ovikak (SMITH), 1879, A., 894.  
 specific heat of (WEBER), 1874, 224.  
 behaviour of, at high temperatures (ROSE), 1873, 1195.  
 chemical effects of oxygenised (SKEY), 1876, ii., 609; 1877, ii., 710.  
 analysis and valuation of (WITTSTEIN), 1876, i., 108.  
 See also Carbon.
- Graphitic acid** (BARTOLI and PAPA-SOGLI), 1882, A., 850.
- Grass.** See under Agricultural Chemistry.
- Gravitating masses**, action of heat on (CROOKES), 1874, 221.
- Gravity, specific.** See Specific gravity.
- Grease**, waggon, preparation of patent (ANON.), 1873, 305.
- Greenstones** (PETERSEN), 1873, 733; 1882, A., 588.  
 occurrence of scorodite, pharmacosiderite and olivenite in (COLLINS), 1877, ii., 283.
- Grenade**, a new dye-stuff (REIMANN), 1873, 208.
- Grey powder**, mercuric oxide in (LINDO), 1880, A., 930.
- Grignon**, experiments at. See under Agricultural Chemistry.
- Grit**, "Doxall," composition of (WETHERED), 1882, T., 81.
- Grochaute** and magnochromite (WEB-SKY), 1874, 666.
- Groenhartin.** See Lapachol.
- Grossular** (KÖNIG), 1879, A., 606.
- Grossularite** (LIVERSIDGE), 1881, A., 992.
- Grotta del Cane**, gases of the (FINOT), 1877, i., 448; (YOUNG), 1878, T., 51; (COSSA), 1878, A., 955.
- Ground-nut.** See Earth-nut under Agricultural Chemistry.
- Grove's battery.** See under Electro-chemistry.
- Grünauite** (*saynite*), a new nickel ore (LASPEYRES), 1877, i., 581.  
 not a distinct mineral, but a mineral mixture (LASPEYRES), 1877, ii., 858.
- Guadalcazarite.** See Metacinnabarite.
- Guaiacol** (*methylpyrocatechol*; *hydroxymethoxybenzene*) (WILLIAMS), 1874, 583.  
 behaviour of different reagents with (GRÄTZEL), 1877, ii., 515.  
 action of phosphorus pentachloride on (FISCHLI), 1878, A., 866.  
 derivatives of (TIEMANN and KOPPE), 1882, A., 54.
- Guaiacolsulphonic acid**, potassium salt of (TIEMANN and PARRISIUS), 1881, A., 270; (TIEMANN and KOPPE), 1882, A., 54.
- Guaiacone**, *tetrachloro-*. See *tetra-Chlorotoluquinone*.
- Guaiacum**, decomposition of, by distillation over zinc-dust (BÖTSCH), 1882, A., 210.  
 as a test for copper (PURGOTTI), 1878, A., 754.  
 value of tincture of, as a test for ozone (BINZ), 1873, 938.  
 tincture of, as a test for the purity of "Kirschenwasser" (BOUSSINGAULT), 1875, 292.
- Guaiene** (WIESER), 1881, A., 813; (BÖTSCH), 1882, A., 211.
- Guaiol.** See Tiglic aldehyde.
- Guanajuatite.** See Frenzelite.
- Guanamine** (*formoguanamine*) and its compounds (NENCKI), 1874, 1089; 1875, 754, 1201; 1876, ii., 188, 191, 509; 1877, i., 299.
- Guanidine** (STEINER), 1875, 882.  
 an oxidation-product of albumin (LOSSEN), 1880, A., 413.  
 synthesis of (DELITSCH), 1874, 576.  
 action of aldehydes on (SCHIFF), 1878, A., 669.  
 and its derivatives, action of anhydrides on (McCREATH), 1875, 465, 885; 1876, i., 400.  
 behaviour of, in the organism (GERGENS and BAUMANN), 1876, ii., 110.  
 compounds, aromatic (BERGER), 1880, A., 802.  
 compound of sarcosine and (BAUMANN), 1875, 146.  
 salts (JOUSSELIN), 1879, A., 914.  
 action of heat on (NENCKI), 1875, 755.  
 action of the halogens on (KAMENSKI), 1878, A., 564.  
 carbonate, action of hypochlorites and hypobromites on (FENTON), 1879, T., 14.  
 action of iodine on (v. RECHENBERG), 1878, A., 719.

- Guanidine carbonate**, action of, on phenylthiocarbimide in presence of water (BAMBERGER), 1882, A., 395.
- diethylcarbonate** (NENCKI), 1875, 755.
- nitrate**, action of hypochlorites and hypobromites on (FENTON), 1879, T., 14.
- sulphate** (FENTON), 1879, T., 794.
- thiocyanate**, formation of, from thiocarbamide (VOLHARD), 1874, 575.
- removal of sulphur from** (BYK), 1879, A., 614; 1880, A., 311.
- valerate and caproate**, condensation-products of (v. BANDROWSKI), 1876, ii., 190.
- nitroso-** (JOUSSELIN), 1878, A., 132; 1879, A., 613, 914.
- action of iodine on** (v. RECHENBERG), 1878, A., 719.
- Guanidines** (WEITH), 1875, 251; (ERLENMEYER), 1882, A., 191.
- synthesis of** (ERLENMEYER), 1880, A., 243.
- conversion of substituted thiocarbamides into** (FORSTER), 1875, 465.
- cyano-** (LANDGREBE), 1878, A., 216; 1879, A., 53.
- Guanidodibenzoic acid** (GRIESS), 1874, 906; 1879, A., 466.
- Guanidodinitrophenol** (*amidocarbimidamidodinitrophenol*) (GRIESS), 1882, A., 969.
- Guanidophenol** (GRIESS), 1882, A., 969.
- $\alpha$ -Guanidopropionic acid**. See *Alacreatine*.
- $\beta$ -Guanidopropionic acid** (MULDER), 1877, ii., 311.
- Guanine** (SCHÜTZENBERGER), 1874, 599; 1878, A., 235; (DRECHSEL), 1882, A., 27.
- in pigs' urine** (PECILE), 1877, i., 330.
- in salmon roe** (PICCARD), 1875, 566.
- constitution of** (GRIMAU), 1877, ii., 741.
- reaction** (CAPRANICA), 1881, A., 655.
- hydrochloride**, action of picric acid on (CAPRANICA), 1881, A., 655.
- Guano**. See under *Agricultural Chemistry*.
- Guano en roche** and "**guano cristalizado**" (DOMEYKO), 1880, A., 446.
- Guanoline** (*ethyllic guanidilincarboxylate*) (NENCKI), 1878, A., 780.
- Guanovulite**, a new mineral from Peruvian guano (WIBEL), 1874, 779.
- Guanylcabamide** (*dicyanliamidine*) (BAUMANN), 1874, 793; 1875, 446.
- behaviour of, in the organism** (GERGENS and BAUMANN), 1876, ii., 110.
- Guanylphenylthiocarbamide**, and its salts (BAMBERGER), 1881, A., 43; 1882, A., 395.
- Guanylthiocarbamide** (RATHKE), 1879, A., 41; (BAMBERGER), 1881, A., 43.
- Guarana**, extraction of caffeine from (GREENE), 1877, ii., 627.
- tannic acid of** (GREENE), 1877, ii., 897.
- Guejarite**, a new mineral species discovered in the district of Guejar, in the Sierra-Nevada, Andalusia (CUMENGE), 1881, A., 517.
- crystalline form of** (FRIEDEL), 1881, A., 517.
- Guinea-pigs**, proteids of the *Vesicula seminalis* in (LANDWEHR), 1882, A., 543.
- Gum**, chemistry of (HIRSCHSOHN), 1878, A., 158.
- a new species of, occurring in beetroot molasses** (v. LIPPMAHN), 1881, A., 888.
- beetroot**, composition of (ZULKOWSKI), 1879, A., 660; (BUNGE), 1879, A., 912; (ZULKOWSKI and RENNER), 1880, A., 561.
- formation of, in fruit-bearing trees** (PRILLIEUX), 1874, 383.
- East Indian** (RIEM), 1876, i., 366.
- New Zealand Kauri** (MUIR), 1874, 733; (RENNIE), 1881, T., 240.
- of the *Quebracho Colorado*** (ARATA), 1878, A., 986.
- vegetable** (KIRCHNER and TOLLENS), 1875, 1179.
- supposed transformation of cellulose into, in plants** (MERCADANTE), 1876, i., 954.
- behaviour of, towards chromates under the influence of light** (EDER), 1879, A., 911.
- reaction of, with sodium tungstate** (SONNENSCHN), 1874, 296.
- prevention of mould in solution of** (HIRSCHBERG), 1873, 100.
- and mucilage**, absorption of, from the intestinal canal (ANON.), 1875, 95.
- estimation of, in wine** (REBOUL), 1881, A., 199.
- insoluble, for envelopes, etc.** (FOX), 1878, A., 923.
- Gum-arabic** (ANON.), 1874, 99; (KILIANI), 1882, A., 591.
- influence of, in certain chemical reactions** (LEFORT and THIBAUT), 1882, A., 1322.
- of strong adhesive power** (ANON.), 1874, 99.
- comparative examination of the most important kinds of** (MASING), 1880, A., 827; 1881, A., 212.

- Gum-arabic**, detection of dextrin in (HAGER), 1874, 715.  
 estimation of (HAGER), 1873, 534;  
 (LEFORT and THIBAUT), 1882, A., 1323.
- Gum-resin**. See under Resins.
- Gum-tragacanth**, examination of (GIRARD), 1876, i., 62.  
 comparative examination of various kinds of (MASING), 1881, A., 212.
- Gum, wood-**. See Xylan under Carbohydrates.
- Gummite** (GENTH), 1880, A., 96;  
 (HIDDEN), 1881, A., 1110.
- Gun-cotton** and collodion preparations (MITCHELL), 1873, 540.  
 composition of (ABEL), 1877, i., 453;  
 (CHAMPION and PELLET), 1877, ii., 301.  
 chemical composition of various (CHAMPION and PELLET), 1877, i., 228.  
 newly discovered property of (ANON.), 1873, 658.  
 spectrum of light of exploding (LOHSE), 1875, 119.  
 heat of formation of (SARRAU and VIEILLE), 1881, A., 342, 969.  
 decomposition of, in a closed vessel (SARRAU and VIEILLE), 1879, A., 991; 1880, A., 780.  
 influence of the fuse on compressed (CHAMPION and PELLET), 1876, i., 516.  
 action of stannous oxide dissolved in soda on (BÖTTGER), 1874, 192.  
 preparation of red quick matches from (BÖTTGER), 1873, 956.  
 See also Pyroxylin, and Cellulose nitrate under Carbohydrates.
- Gunnisonite**, a new mineral from Colorado (CLARKE and PERRY), 1882, A., 1176.
- Gunpowder**, application of thermochemical theories to (CASTAN), 1874, 1050.  
 combustion of (BERTHELOT), 1879, A., 875; (NOBLE and ABEL), 1879, A., 992.  
 explosion of (BERTHELOT), 1876, ii., 172.  
 direct determination of the degree of intensity of the explosion of (CHABRIER), 1874, 1023.  
 specific gravity of (LUCK), 1874, 290.  
 method of comparing different kinds of (DE TROMENEC), 1873, 1260.  
 analysis of (WAGNER), 1881, A., 193.  
 analysis of the saltpetre used for the manufacture of (FRESSENIUS), 1876, ii., 651.
- Gunpowder**, fired, existence of potassium thiosulphate in the solid residue of (NOBLE and ABEL), 1881, A., 977.
- Gunpowders**, wood, composition and properties of (TOMS), 1878, A., 923.
- Gurjun balsam**, an indifferent crystalline resin from (FLÜCKIGER), 1878, A., 439.
- Gutta-percha**, peculiar property of 1881, A., 953.
- Gypsum** at Airolo, and in the Val Canaria (v. FRITSCH), 1874, 673.  
 crystals from Sütel (KLIEN), 1877, i., 582.  
 See also Anhydrite, Calcium sulphate, and under Agricultural Chemistry.
- Gyrolite** (*tobermorite*) (HEDDLE), 1882, A., 289.

## H.

**Hæmatein**. See under Colouring matters.

**Hæmatin** (CAZENEUVE), 1877, i., 326;  
 (JÄDERHOLM), 1878, A., 237.

hæmin, and a phosphorised substance contained in blood-corpuscles (THUDICHUM and KINGZETT), 1876, ii., 255.

purification of (THUDICHUM and KINGZETT), 1876, ii., 259.

artificial production of the colouring matters of human urine from (MACMUNN), 1881, A., 1056.

non-occurrence of iron in (PAQUELIN and JOLLY), 1875, 279.

action of sodium hyposulphite on (CAZENEUVE), 1877, ii., 346.

**Hæmatite**, and brown (LIVERSIDGE), 1881, A., 993.

brown, of Langenstrieigis, minerals accompanying (FRENZEL), 1874, 1140.

mode of formation of the deposits of, in the Great Valley, U.S. (PRIME), 1876, i., 347.

magnetic, from Nova Scotia (HOW), 1876, ii., 55.

artificial pseudomorph of (KELLER), 1882, A., 576.

artificial production of (COPPOLA), 1880, A., 223.

from Bohemia (ANON.), 1874, 451.

See also Ferric oxide under Iron.

**Hæmatoin** (JÄDERHOLM), 1878, A., 237.

**Hæmatoxylin** (*hæmatin*), behaviour of, on destructive distillation (MEYER), 1880, A., 248.

action of iodine on (FRÉBAULT), 1877, i., 347.



**Hæmatoxylin** (*hæmatin*) as an indicator in acidimetry (MASCHKE), 1876, i., 740.

**Hæmatoxylinphthalein** (LETTS), 1880, A., 54.

**Hæmin**, hæmatin, and a phosphorised substance contained in blood corpuscles (THUDICHUM and KINGZETT), 1876, ii., 255.

action of gaseous hydrogen chloride, of nitric acid, and of sulphuric acid on, and experiments intended to effect the extraction of iron from (THUDICHUM and KINGZETT), 1876, ii., 256.

**Hæmocyanin**, from the blood of the *Octopus vulgaris* (FREDERICQ), 1879, A., 333.

See also Proteids.

**Hæmoglobin** and its derivatives (STEGE), 1875, 775; (THUDICHUM and KINGZETT), 1876, ii., 256; (JADERHOLM), 1878, A., 237.

crystalline (SCHMIDT), 1873, 185; (HÜFNER), 1881, A., 625.

variations of, in the zoological series (QUINQUAUD), 1873, 1245.

importance of light for the formation of (TIZZONI and FILETTI), 1882, A., 751.

influence of, on the coagulation of plasma (SCHMIDT), 1873, 185.

and its derivatives, some reactions of (HUSON), 1876, ii., 104; 1877, i., 753.

action of quinine on (MÜLLER), 1873, 288.

influence of alkaloids on certain properties of (SCHÄR), 1875, 175.

spectroscopic detection of, and occurrence of, in the animal organism (LANKESTER), 1873, 398.

estimation of (HÜFNER), 1881, A., 112.

estimation of, in blood (QUINQUAUD), 1873, 1245; (RAJEWSKY), 1876, ii., 216; (HÜFNER), 1879, A., 835.

spectroscopic estimation of the amount of, in human blood (WISKEMANN), 1877, ii., 808.

**Carboxyhæmoglobin** (WEYL and v. ANREP), 1880, A., 816.

conversion of, into oxyhæmoglobin (LIMAN), 1877, ii., 346.

**Methæmoglobin** (*peroxyhæmoglobin*) (JÄDERHOLM), 1878, A., 237; 1881, A., 185.

**Oxyhæmoglobin** (JÄDERHOLM), 1878, A., 237.

conversion of, into carboxyhæmoglobin (LIMAN), 1877, ii., 346.

**Hair**, conversion of, into manure (RISS-MÜLLER and WIESINGER), 1879, A., 859.

human, action of hydrochloric acid on (HORBACZEWSKI), 1880, A., 723.

and feathers, black colouring matter contained in (HONGKINSON and SORBY), 1877, i., 427.

**Hair-dyes** (BRAGA), 1880, A., 772; 1881, A., 67.

**Hai-thao**. See Gelose.

**Halloysite** (HELMHACKER), 1881, A., 540; (LIVERSIDGE), 1881, A., 993.

from Tüfifer (JOHN), 1881, A., 693.

**Halogen acids**, thermic researches on the amides and ethers of (BERTHELOT), 1876, i., 675.

reciprocal displacement of (BERTHELOT), 1881, A., 869.

etherification of (VILLIERS), 1880, A., 711; 1881, A., 32.

decomposition of, by metals (BERTHELOT), 1879, A., 559.

action of, on the sulphates of mercury (DITTE), 1880, A., 12.

action of, on selenious anhydride (DITTE), 1876, ii., 476; 1877, i., 45.

action of, on tellurous oxide (DITTE), 1876, ii., 606; 1877, i., 45.

**Halogen compounds**, organic, reduction of, by zinc and zinc-dust (SABANÉEFF), 1877, ii., 728.

action of caustic alkalis on acetone solutions of (WILGERODT), 1882, A., 491.

**Halogen salts**, isomeric state of (BERTHELOT), 1882, A., 355.

thermochemistry of (BERTHELOT), 1881, A., 219.

volume relations of (MÜLLER-ERZBACH), 1881, A., 71.

behaviour of acid anhydrides with, in absence of oxygen (SCHULZE), 1880, A., 437.

anhydrous, action of dry hydrogen on (POTILIZIN), 1881, A., 6.

alkaline, action of, on ultramarine (HEUMANN), 1877, ii., 707.

oxidation of (BERTHELOT), 1877, ii., 841; (SCHULZE), 1880, A., 436.

**Halogens** (ZÜBLIN), 1882, A., 7.

atomic refraction of the (BRÜHL), 1880, A., 782.

and hydracids, heat evolved in the union of hydrocarbons with the (BERTHELOT), 1876, i., 870.

vapour-density of the (MEYER), 1881, A., 872.

- Halogens**, mutual replacement of the, in their compounds (POTILIZIN), 1874, 867; 1876, i., 677; 1877, ii., 109; 1880, A., 365; 1881, A., 134, 342; (BERTHELOT), 1881, A., 5, 343.
- influence of mass on the mutual substitution of the (POTILIZIN), 1882, A., 457.
- relations of affinity of the, in their combination with the metals (GRAMP), 1875, 423.
- relative affinities and reciprocal displacements of oxygen and the, in metallic compounds (BERTHELOT), 1878, A., 634; 1879, A., 351.
- sulphur and oxygen, reciprocal displacement between the, when combined with hydrogen (BERTHELOT), 1879, A., 296.
- differences of affinity of the, as multiples of the same constant (RÜHLMANN), 1878, A., 634.
- comparison of the combining energies of the, and of sodium with different organic residues (WISLICIENUS), 1882, A., 934.
- action of the, at high temperatures on metallic oxides (CROSS and SUGUIRA), 1878, T., 405.
- compounds of the, with olefines, heat of vaporisation of (BERTHELOT), 1879, A., 435.
- estimation of the, by ammonium thiocyanate (VOLHARD), 1878, A., 746.
- method of estimating the, in organic compounds (KLOBUKOWSKI), 1877, ii., 225.
- See also Bromine, Chlorine, Fluorine and Iodine.
- Halotrichite** from Idria (v. ZEPHAROVICH), 1881, A., 232.
- Hannayite** (VOM RATH), 1881, A., 231.
- Harmotome**, relation of, to phillipsite (FRESENIUS), 1881, A., 695.
- Hatchettolite** (SMITH), 1877, ii., 576.
- from Mitchell Co., North Carolina (ALLEN), 1878, A., 206.
- Haughtonite**, a new mica (HEDDLE), 1881, A., 385.
- Hausmannite** (SÖGREN), 1881, A., 698; (LIVERSIDGE), 1881, A., 994.
- See also *tri*Manganic *tetroxide* under Manganese.
- Hauyn family**, microchemical test for minerals of the (KNOP), 1875, 620.
- Hay**. See under Agricultural Chemistry.
- Hayesine**. See Ulexite.
- Heat**, dispersion of, in bodies, and its relation to the structure of minerals (JANNETTAZ), 1876, ii., 39.
- animal. See Animal heat.
- solar, application of, as a source of mechanical power (BERGH), 1874, 123.
- industrial utilisation of (MORCHOT), 1880, A., 765.
- See also Thermochemistry.
- Heavy-spar**. See Barium sulphate and Barytes.
- Hebronite**. See Amblygonite.
- Hectograph** (WARTHA), 1879, A., 836.
- Hedera Helix*. See Ivy.
- Hederic** and **hederatannic acids** (v. HARTSEN), 1876, i., 613; (VERNET), 1881, A., 440.
- Hedyphane** containing baryta, from Långban (LINDSTRÖM), 1881, A., 531.
- Helenin** (*inulin anhydride*) (KALLEX), 1874, 352; 1876, i., 917.
- Helianthin** (*dimethylanidobenzeneazobenzene-sulphonic acid*; *methyl-orange*) (GRIESS), 1877, ii., 456; (WILLIAMS), 1879, A., 553.
- Helianthus annuus* (*sunflower*). See under Agricultural Chemistry.
- Helicin** (SCHIFF), 1882, A., 303, 412.
- synthesis of (MICHAEL), 1879, A., 1038.
- action of heat on (SCHIFF), 1881, A., 439.
- action of *m*-amidobenzoic acid on (SCHIFF), 1880, A., 126.
- action of urea on (SCHIFF), 1882, A., 412.
- compounds of, with amidoacetic and amidohexic sulphites, and with sodium sulphite (SCHIFF), 1882, A., 305.
- iso*Helicin (SCHIFF), 1881, A., 439.
- Heliotrope** (FRENZEL), 1880, A., 615.
- Helix pomatia*, mucus of, and a carbohydrate (achrooglycogen) from (LANDWEHR), 1882, A., 708.
- Hellebore root**, black, rhizomes of (HERLANT), 1882, A., 1125.
- white, constituents of (WEPPE), 1873, 905.
- Helleboretin** (GREENISH), 1880, A., 719; (HERLANT), 1882, A., 1125.
- Hematite**. See Hematite.
- Hemialbumose** (VINES), 1881, A., 1062.
- Hemicollin** (HOFMEISTER), 1881, A., 294.
- Hemin**. See Hæmin.
- Hemipinic acid**, derivatives and constitution of (WEGSCHEIDER), 1882, A., 1206.

- Hemipinic acid**, reactions of (BECKETT and WRIGHT), 1876, i., 286.  
sodium salt of, action of heated soda-lime on (BECKETT and WRIGHT), 1876, i., 283.  
*o*-amido- and nitro-, and their salts (PRINZ), 1882, A., 402.
- iso***Hemipinic acid** (TIEMANN and MENDELSON), 1877, ii., 487.
- Hemipinic anhydride** (PRINZ), 1882, A., 403; (WEGSCHEIDER), 1882, A., 1207.  
amido- (*azo-opiunic acid*) and its barium salt (PRINZ), 1882, A., 402.
- Hemithrenes** so-called, and other rocks of the gneiss-granite plateau in the department of Puy-de-Dôme (v. LASAULX), 1874, 881.
- Hemp**. See under Agricultural Chemistry.
- Hendecoidic acid**. See Undecoidic acid.
- Henwoodite**, a new mineral (COLLINS), 1877, ii., 282.
- Heptadecoidic acid**. See Margaric acid.
- Heptadecylamine** and **heptadecylstearylcarbamide** (v. HOFMANN), 1882, A., 1053.
- n*-**Heptane** from petroleum (SCHORLEMMER), 1873, 319.  
from *Pinus Sabiniana* (THORPE), 1879, T., 296.  
physical properties of (THORPE), 1879, T., 299; 1880, T., 214.  
heat of combustion of (LUGININ), 1881, A., 1113.  
derivatives of (SCHORLEMMER), 1877, ii., 866.
- Heptane** (*ethylisoamyl*; *dimethylbutylmethane*), physical properties of (THORPE), 1880, T., 216.  
synthesis of (PURDIE), 1881, T., 464.  
*methyl ethylisopropylmethane*, methyl amyl ketone from (SCHORLEMMER), 1873, 322.  
(*dimethyl diethylmethane*) from petroleum, and a ketone from (SCHORLEMMER), 1873, 319.
- Heptene**. See Heptylene.
- Heptic acid** (DEMARÇAY), 1878, A., 661; 1879, A., 458.
- Heptine** (*heptine*) and its oxidation (MORRIS), 1882, T., 173.  
and its glycol, probable constitution of (MORRIS), 1882, T., 177.
- Heptinyl alcohol**. See Diallylcarbinol.
- Heptohexylcarbamide** (*hexylenanthylcarbamide*) (v. HOFMANN), 1882, A., 1053.
- n*-**Heptoic acid** (*heptylic acid*; *ananthie acid*) and its salts (SCHORLEMMER), 1873, 617; (GRIMSHAW and SCHORLEMMER), 1873, 1073; (LIEBEN and JANEČEK), 1877, ii., 879; (CAHOUS and DEMARÇAY), 1879, A., 1037.  
from *enanthol* (MEHLIS), 1878, A., 134.  
from hexylic alcohol (FRANCHIMONT), 1873, 55.  
preparation and properties of (GRIMSHAW and SCHORLEMMER), 1873, 1075.  
barium, calcium and potassium salts of (GRIMSHAW and SCHORLEMMER), 1873, 1078.  
*α*-amido- (HELMS), 1876, i., 374; (CAHOUS and DEMARÇAY), 1879, A., 1037.
- Heptoic acid** (*methyl diethylacetic acid*) (IDANOFF), 1877, i., 454.
- iso***Heptoic acid** (HECHT and MUNIER), 1879, A., 140; 1882, A., 40.
- iso***Heptoic acid** [b.p. 210°—213°] obtained by oxidation of the alcohol derived from ethylisoamyl (GRIMSHAW), 1873, 315.
- Heptoic aldehyde** (*enanthol*) (CROSS), 1877, ii., 123; (KRAFFT), 1878, A., 292.  
preparation of, and *enanthol*-ammonia (ERLENMEYER and SIGEL), 1875, 1007.  
heat of combustion of (LUGININ), 1880, A., 787.  
action of potash on (BORODIN), 1873, 58.  
compound of, with the sulphites of amidoacetic, amidobenzoic, and amidohectic acids (SCHIFF), 1882, A., 304.
- n*-**Heptoic anhydride** and **amide** (MEHLIS), 1878, A., 135.
- Heptolic acid**. See Oxyheptic acid.
- Heptonitrile** (MEHLIS), 1878, A., 135.
- Heptylacetic acid**. See Nonoic acid.
- Heptylamine** (*enanthylamine*) (v. HOFMANN), 1882, A., 1054.
- Heptylene**, and *dinitro*- (MORRIS), 1882, T., 175.
- Heptylene** [b.p. 96°] from colophony (RENARD), 1880, A., 893; 1881, A., 738; 1882, A., 737, 1179, 1301.
- Heptylene** [b.p. 78°—80°], preparation of, from pentamethylic ethylic iodide (BUTLEROFF), 1875, 1249.
- ψ*-**Heptylene** [b.p. 84°] (PAWLOFF), 1874, 1076.
- Heptylic acid**. See Heptoic acid.

- n*-Heptylic alcohol and its derivatives (GRIMSHAW and SCHORLEMMER), 1873, 1081; (CROSS), 1877, ii., 123.
- iso*-Heptylic alcohol (GRIMSHAW), 1873, 313
- sec*-Heptylic alcohol (*methylamylcarbinol*) (GRIMSHAW), 1873, 313.
- (*methylisoamylcarbinol*) (GRIMSHAW), 1873, 318; (ROHN), 1878, A., 486.
- (*ethylisobutylcarbinol*), etherification of (MENSCHUTKIN), 1882, A., 817.
- (*dipropylcarbinol*) (STSCHERRAKOFF), 1881, A., 401.
- tert*-Heptylic alcohol (*pentamethyl-ethyl alcohol*) (BUTLEROFF), 1875, 1248; (KASCHIRSKY), 1879, A., 46; (BOGOMOLETZ), 1881, A., 401.
- hydrate of (ELTEKOFF), 1878, A., 482.
- (*methyl-ethylpropylcarbinol*) (PAWLOFF), 1877, ii., 310, 732.
- (*methyl-ethylisopropylcarbinol*) (PAWLOFF), 1877, ii., 310, 732; (KASCHIRSKY), 1882, A., 37.
- (*dimethylisobutylcarbinol*) [b.p. 130°] (PAWLOFF), 1874, 1076; (KASCHIRSKY), 1882, A., 37.
- [b.p. 139°] (KASCHIRSKY), 1879, A., 46.
- n*-Heptylic acetate, bromide, and chloride (CROSS), 1877, ii., 125.
- chloride, action of chromyl dichloride on (ETARD), 1877, ii., 427.
- heptoate and iodide (CROSS), 1877, ii., 126.
- sec*-Heptylic bromide, and iodide (VENABLE), 1881, A., 82.
- Heptylidene (FUCARO), 1881, A., 1032.
- Heptylidenethiocarbimide (SCHIFF), 1878, A., 669.
- Heptylidene*lithiodicarbamide* (SCHIFF), 1878, A., 669.
- sec*-Heptylmalonic acid (VENABLE), 1881, A., 82.
- Heraclium giganteum*, occurrence of ethyl-compounds in the fruit and umbel-stalks of (GUTZEIT), 1875, 1246.
- Heraclium Sphondylium*, essential oil of the fruit of (MÜSLINGER), 1877, ii., 425.
- Heraclin (GUTZEIT), 1880, A., 914.
- Herapathite. See Quinine sulphato-periodide under Alkaloids.
- Herbivora. See under Agricultural Chemistry.
- Herniaria glabra*, ash of (WITTSTEIN), 1877, i., 487.
- Herrengrundite (*urvälygyte*), a new basic copper sulphate (BREZINA), 1881, A., 524.
- Herschelite from Etna (V. LASAULX), 1882, A., 284.
- Hesperetic acid. See *iso*Ferulic acid.
- Hesperetin, and hesperetol (TIEMANN and WILL), 1881, A., 739.
- Hesperidene. See *d*-Limonene under Terpenes.
- nitroso-. See *l*-Carvoxime.
- Hesperidin. See Naringin under Glucosides.
- Hesperidin-sugar. See *iso*Dulcitol under Carbohydrates.
- Hessite (*silver telluride*) (BURKART), 1874, 32; (GENTH), 1875, 430; (DOMEYKO), 1876, i., 349; (SCHRAUFE), 1879, A., 898.
- from Botés in Transylvania (KRENNER), 1881, A., 364.
- Heterolite, a new mineral (MOORE), 1879, A., 17.
- Heterosite, blue (VOM RATH), 1881, A., 550.
- Heubachite (V. SANDEBERGER), 1877, ii., 855.
- Heulandite (*stilbite*) (SCHMID), 1882, A., 582.
- from Kerguelen's Island (LIVERSIDGE), 1881, A., 695.
- Hexacetylrufigallol (SCHIFF), 1874, 271.
- Hexadecane (*dioctyl*) (EICHLER), 1880, A., 229.
- Hexadecic acid (*di-n-heptylacetic acid*) (JOURDAN), 1880, A., 314.
- Hexadecylacetic acid. See Stearic acid.
- Hexadecylic alcohol (*ethyl; cetylic alcohol*), action of phosphorus pentoxide on (MARKOWNIKOFF), 1874, 144.
- action of aluminium and aluminium iodide on (GLADSTONE and TRIBE), 1881, T., 8.
- Hexadecylmalonic acid (*cetylmalonic acid*) (GUTHZEIT), 1881, A., 408.
- Hexaethyl-. See Hexethyl-.
- "Hexaglycollide" (*hexaglycollic anhydride*) (SCHIFF), 1874, 572.
- Hexagonite. See Hornblende.
- Hexahydroanthracene (LIEBERMANN and SIMON), 1882, A., 857.
- Hexahydronaphthalene (WREDEN and DE ZNATOWICZ), 1877, ii., 899.
- Hexahydropyridine. See Piperidine.
- Hexahydrobiphenyl, heat of combustion of (LUGININ), 1881, A., 1113.
- Hexahydroxyanthraquinone (*rufigallic acid*) (SCHIFF), 1874, 271; (KLOBUKOWSKI and NÖLTING), 1876, i., 259; (WIDMAN), 1876, ii., 518; (KLOBUKOWSKI), 1877, i., 84; ii., 618.



**Hexahydroxyanthraquinone** (*rufigallie acid*), decomposition of (SCHREDER), 1881, A., 282.

**$\alpha$ -Hexahydroxydiphenyl** (*dipyrogallol*) (LIEBERMANN), 1873, 1033.

**$\beta$ -Hexahydroxydiphenyl** (BARTH and GOLDSCHMIEDT), 1879, A., 932.

**$\gamma$ -Hexahydroxydiphenyl** (COBENZL), 1882, A., 405.

**Hexahydroxydiphenyls**, three isomeric (BARTH and GOLDSCHMIEDT), 1879, A., 931.

**Hexahydroxydiphenylene ketone** (BARTH and GOLDSCHMIEDT), 1879, A., 932.

**Hexahydro-*m*-xylene** (WREDEN), 1874, 258.

**Hexahydro-*p*-xylene** (SCHIFF), 1880, A., 892; 1882, A., 739.

**Hexamethoxydiphenyl**, and *dibromo- and dichloro-* (EWALD), 1879, A., 253.

**Hexamethyltriimidotriphenylmethane** (E. and O. FISCHER), 1879, A., 236.

**Hexamethylbenzene** (LE BEL and GREENE), 1879, A., 49; (ADOR and RILLIET), 1879, A., 527; (ANON.), 1880, A., 864; (V. HOFMANN), 1881, A., 260.

preparation of, from acetone (GREENE), 1879, A., 940.

synthesis of (FRIEDEL and CRAFTS), 1881, A., 40.

**Hexamethyldiphenylcarbamide**. See Dimesitylcarbamide.

**Hexamethylenetetramine** (*hexamethylenecamine*) (ROMENY), 1878, A., 718.

**Hexamethylethane** (*octane*) (LWOFF), 1881, A., 399.

"**Hexamethylstilbene**" (HEPP), 1875, 362.

***n*-Hexane** (SCHORLEMMER), 1877, ii., 866.

action of bromine on (MERZ and WEITH), 1879, A., 303.

chlorination of (SCHORLEMMER), 1880, A., 158.

***tert.*-Hexane** (*trimethylethylmethane*) (GARAINOFF), 1873, 43.

**Hexane**, *dibromo-* (*hexylenic bromide*), oxidation products of (HECHT), 1878, A., 844.

(*tetramethylethylenicbromide*) (PAWLOFF), 1878, A., 563.

*hexabromo-* (*dibromodiallylic tetra-bromide*) (HENRY), 1874, 456, 1078.

*hexa-* and *octo-bromo-*, from hexylic iodide (MERZ and WEITH), 1877, ii., 867; 1879, A., 303.

*iodo-*. See Hexylic iodides.

*dinitro-* (CHANCEL), 1882, A., 825.

**Hexanedicarboxylic acid**. See Trimethylglutaric acid.

**Hexaphenylethylenephosphonium dibromide** (MICHAELIS and GLEICHMANN), 1882, A., 1063.

**Hexapropylene** (*octadecylene*) (PRUNIER), 1873, 486.

**Hexazo-**. See under Azo.

**Hexene**. See Hexylene.

**Hexenoic acid** ( *$\alpha$ -ethylcrotonic acid*) (PETRIEFF), 1874, 41; (WALDSCHMIDT), 1878, A., 136; (FITTIG), 1880, A., 375.

*bromo-* and *chloro-*. See Bromoethylcrotonic acid and Chloroethylcrotonic acid.

(*pyroterebic acid*) and its salts (WILLIAMS), 1874, 70; (FITTIG), 1876, i., 897; (FITTIG and BREIT), 1880, A., 315; (FITTIG and GEISLER), 1882, A., 41.

constitution of (MIELCK), 1876, i., 923.

action of hydrobromic acid on (FITTIG), 1880, A., 378.

(*hydrosorbic acid*) (KACHEL and FITTIG), 1874, 45; (FITTIG), 1876, i., 897; 1880, A., 377.

structure of (MENSCHUTKIN), 1880, A., 382.

*bromo-* (FITTIG), 1880, A., 377.

*dibromo-* (KACHEL and FITTIG), 1874, 44.

(*isohydrosorbic acid*) (HJELT), 1882, A., 946.

**Hexenylalcohol** (*dimethylallylcarbinol*), synthesis of (A. and M. SAYTZEFF), 1876, i., 694; 1877, ii., 298.

heat of combustion of (LUGININ), 1881, A., 871.

oxidation of (SCHIROKOFF), 1880, A., 382.

action of dilute sulphuric acid on (A. and P. SAYTZEFF and NIKOLSKY), 1879, A., 214; (SAYTZEFF), 1879, A., 447.

***sec.*-Hexenyl alcohol** from allylacetone (CROW), 1878, T., 54.

**Hexerinic acid** (FITTIG), 1880, A., 376.

**Hexethyltriimidodiphenyl phenylene diketone** (*hexethyltriimidodibenzoylbenzene*) (MICHLER and GRADMANN), 1877, ii., 335.

**Hexethylbenzene** (ALLBRIGHT, MORGAN, and WOOLWORTH), 1878, A., 664.

**Hexethyl-disilicic ether** (TROOST and HAUTEFEUILLE), 1873, 747.

**Hexic acid** and *isohexic acid* (DEMARÇAY), 1879, A., 457.

**Hexinene** (*hexine; diallyl*) (WAGNER and TOLLENS), 1873, 1122.

- Hexinene** (*hexine*; *diallyl*), constitution of (HENRY), 1878, A., 962; (SOROKIN), 1880, A., 370.  
 heat of formation and combustion of (BERTHELOT and OGIER), 1881 A., 674.  
 oxidation of (SOROKIN), 1878, A., 962.  
 derivatives of (HENRY), 1874, 456; 1875, 51.  
 (*methylpropylacetylene*) from mannitol (HECHT), 1878, A., 717.
- Hexinyl chloride** (*chlorodiallyl*) (HENRY), 1879, A., 34.
- Hexo-iso- and -tert.-amylcarbamide** (*amylcaproylcarbamide*) (V. HOFMANN), 1882, A., 1053.
- n-Hexoic acid** (*caproic acid*) (LIEBEN and ROSSI), 1873, 267; (LIEBEN and JANEČEK), 1877, ii., 879.  
 in crude fermentation butyric acid (GRILLONE), 1873, 375; (LIEBEN), 1874, 248.  
 heat of combustion of (LUGININ), 1881, A., 872; 1882, A., 567.  
 oxidation of (ERLENMEYER, SIGEL and BELL), 1874, 980; 1876, i., 893.  
 valeric acid from (ERLENMEYER), 1877, i., 590.  
 salts of (KOTTAL), 1874, 249.  
 amido-, compound of heptioic aldehyde with the sulphite of (*ornanth-amidohexoic sulphite*) (SCHIFF), 1882, A., 304.  
 α-amido-. See Leucine.  
 γ-bromo- (FITTIG), 1880, A., 377.  
 action of water on (HJELT), 1882, A., 944.  
 isodibromo- (FITTIG and GEISLER), 1882, A., 42.  
 action of water on (FITTIG), 1880, A., 377.  
 tetrabromo- (KACHEL and FITTIG), 1874, 43.  
 action of water on (FITTIG), 1880, A., 378.  
 iodo- (FITTIG), 1880, A., 377.  
 mono- and di-nitro- (KACHLER), 1878, A., 513.  
 dinitro-, action of sodium-amalgam on (KULLHEM), 1873, 1019; (KACHLER), 1878, A., 514.
- Hexoic acid** (*diethylacetic acid*) (SCHNAPP), 1878, A., 293; (SAYTZEFF), 1878, A., 566; (FITTIG), 1880, A., 376.  
 calcium and barium salts of (SAYTZEFF), 1881, A., 408.  
 amido- (TIEMANN and FRIEDLÄNDER), 1882, A., 56.
- Hexoic acid** (*dimethylacetic acid*) (WISCHNEGRADSKY), 1874, 1083.
- Hexoic acid** (*methylpropylacetic acid*) (SAYTZEFF), 1878, A., 566.  
 from resin oil (KELBE and WARTH), 1882, A., 711.  
 calcium and barium salts of (SAYTZEFF), 1881, A., 408.
- isoHexoic acid** (*isobutylacetic acid*) and its salts (ROHN), 1878, A., 486; (DEMARÇAY), 1878, A., 661.  
 oxidation of (BREIT), 1881, A., 31.
- n-Hexoic aldehyde** (*caproic aldehyde*) (LIEBEN and JANEČEK), 1877, ii., 880.  
 trichloro- (*hexylchloral*) (PINNER), 1877, ii., 586.
- n-Hexoic anhydride**, and amido- (DESTREM), 1878, A., 506.
- Hexolic acid**. See Oxyhexic acid.
- Hexonene**, octobromo- (MERZ and WEITH), 1877, ii., 867.
- Hexonitrile**, amido- *n*- and -*iso*- (ERLENMEYER), 1882, A., 191.
- n-Hexylamine** (V. HOFMANN), 1882, A., 1054.
- β-Hexylamine** (UPPENKAMP), 1875, 552.
- Hexylchloral**. See *tri*Chlorohexoic aldehyde.
- Hexylene** (*tetramethylethylene*) and its derivatives (PAWLOFF), 1878, A., 562; 1879, A., 536; (JAWEIN), 1878, A., 961.  
 haloid compounds of (PAWLOFF), 1878, A., 563.
- β-Hexylene** (*s-methylpropylethylene*) (HECHT and STRAUSS), 1874, 782; (PURDIE), 1881, T., 465; (DOMAC), 1881, A., 1113.  
 action of chlorine dioxide on (DOMAC), 1882, A., 1039.  
 oxidation of (HECHT), 1878, A., 961.
- Hexylene** (*dipropylene*) (PRUNIER), 1873, 486.
- Hexylenes** (JAWEIN), 1878, A., 961.
- Hexylene**, bromo-, oxidation products of (HECHT), 1878, A., 844.  
 dibromo- (HECHT), 1878, A., 717.  
 octobromo- (MERZ and WEITH), 1877, ii., 867; 1879, A., 303.  
 chlorhydrin (*chlorohexylic alcohol*) (DOMAC), 1881, A., 1114.  
 glycol from mannitol, oxidation of (HECHT and MUNIER), 1878, A., 966.  
 See also Pinacone.
- Hexylenic bromide**. See Hexane, di-bromo-.
- Hexyleugenol** (CAHOUS), 1877, i., 462.
- n-Hexylic alcohol** (LIEBEN and JANEČEK), 1877, ii., 879.

- n*-Hexylic alcohol, heptylic acid from (FRANCHIMONT), 1873, 55.
- sec*-Hexylic alcohol (*ethylpropylcarbinol*) (VÖLKER), 1876, i., 364; (OECHSNER DE CONINCK), 1876, i., 694.
- (*pinacolic alcohol*; *methyl-tert.-butylcarbinol*) (FRIEDEL and DA SILVA), 1873, 488.
- (*dimethylisopropylcarbinol*) (BOGOMOLETZ), 1881, A., 401; (KASCHIRSKY), 1882, A., 37; (RIZZA), 1882, A., 491.
- Hexylic alcohol**, chloro- (*hexylene chlorhydrin*) (DOMAC), 1881, A., 1114.
- sec*-Hexylic chloride, action of chromyl dichloride on (ETARD), 1877, ii., 427.
- tert*-Hexylic chloride and iodide (PAWLOFF), 1878, A., 563.
- sec*-( $\beta$ )-Hexylic iodide from mannitol or dulcitol (HECHT), 1873, 370.
- preparation of, from mannitol (DOMAC), 1881, A., 1113.
- oxidation products of (HECHT), 1878, A., 844.
- action of chlorine on (KRAFFT), 1876, ii., 503; 1877, ii., 726.
- action of water on (NIEDERIST), 1879, A., 700.
- isohexitoic acid* from (HECHT and MUNIER), 1879, A., 140; 1882, A., 40.
- sec*-Hexylic thiocyanate (UPPENKAMP), 1875, 552.
- Hexylnitrous acid** (CHANCEL), 1882, A., 710.
- sec*-Hexylthiocarbimide (UPPENKAMP), 1875, 552.
- Hides**, iron salts as a substitute for tan in dressing (ANON.), 1878, A., 543.
- Hieratite**, a new mineral (COSSA), 1882, A., 704.
- Hipparaffin**. See Dibenzomethylenediamide.
- Hippuric acid** (*benzamidooacetic acid*) and its derivatives (CONRAD), 1877, ii., 484; (CURTIUS), 1881, A., 1144.
- occurrence of, in dogs' urine (SALKOWSKI), 1878, A., 594.
- in the urine of Herbivora (WEISKE), 1877, i., 217; (LOEW), 1879, A., 952; 1880, A., 173.
- formation of, in the animal organism (HOFMEISTER), 1874, 385; (V. SCHRÖDER), 1881, A., 928.
- formation of, in the animal organism during fever (WEYL and v. ANREP), 1880, A., 716.
- formation of, in the kidneys (HOFFMAN), 1878, A., 442.
- estimation and separation of (CAZENEUVE), 1879, A., 748.
- Hippurylglycocine** (CURTIUS), 1881, A., 1144.
- Hisingerite** in dolerite from Ovikak (SMITH), 1879, A., 894.
- Hofmann's violet** (MONNET and REVERDIN), 1878, A., 283.
- Holmia** (CLEVE; SORET), 1880, A., 7.
- Holmium** (*Soret's X*), spectrum of (SORET), 1880, A., 7; 1881, A., 349.
- Homacetoxycoumarin**. See Acetylhomoubelliferone.
- Homatropine** (*oxytoluoyltropine*) and its salts (LADENBURG), 1880, A., 410, 714, 815; 1881, A., 420.
- Homilite** (DES CLOIZEAUX and DAMOUR), 1879, A., 32.
- a mineral from Brevig, Norway (PAJKULL), 1878, A., 278.
- Homobenzenyl**-. See Tolenyl-.
- Homobenzoyl**-. See Toluoyl-.
- Homocerebrin** (PARCUS), 1882, A., 235.
- Homocinchonine**, **homocinchonidine** and **homocinchonine**. See under Alkaloids.
- "**Homocreatin**," formation of (LINDENBERG), 1876, i., 700.
- Homofluorescein**, a new colouring matter from orcinol, and its salts (SCHWARZ), 1880, A., 551.
- tetra*- and *hexa*-bromo-, *tri*iodo-, and *hexa*nitro- (SCHWARZ), 1880, A., 552.
- Homofluoresceincyanic acid**, *hexa*nitro- (SCHWARZ), 1880, A., 552.
- Homohydrapatropine** and its salts (PESCI), 1882, A., 1218.
- Homohydroxybenzylic alcohols**, melting and boiling points of (TIEMANN), 1879, A., 924.
- Homohydroxysalicylic acid**. See Dihydroxytoluic acid.
- Homoitaconic acid**. See Tetrylenedicarboxylic acid.
- Homologues** and isomerides, physical properties of (BROWN), 1877, ii., 836.
- boiling point of (PIERRE and PUCHOT), 1873, 251.
- melting point of (v. BAAYER), 1878, A., 3.
- influence of the molecular weight of, on the course of incomplete reactions (MENSCHUTKIN), 1882, A., 384.
- m*-Homo- $\beta$ -*m*-methoxysalicylaldehyde. See Hydroxymethoxytolnaldehyde.
- Homo-oxybenzaldehyde**. See Hydroxytolnaldehyde.
- Homo-oxybenzoic acid**. See Hydroxytoluic acid.

- Homopyrocatechol** (3:4-dihydroxytoluene) (NEVILE and WINTHER), 1882, T., 426.
- $\alpha$ -Homoprotocatechuic acid** (3:4-dihydroxyphenylacetic acid) (TIEMANN and NAGAI), 1877, ii., 340.
- Homopyrrole.** See Methylpyrroline.
- Homocoumarin**, and its salts (HOWARD and HODGKIN), 1882, T., 66.
- p*-Homosalicylaldehyde.** See *o*-Hydroxy-*m*-tolualdehyde.
- Homosalicylic acids.** See Hydroxytoluic acids.
- p*-Homosaligenin** (*p*-homosalicylic alcohol) (SCHOTTEN), 1878, A., 877.
- Homoterephthalic acid.** See *p*-Carboxyphenylacetic acid.
- Homotoluic acid.** See  $\beta$ -Phenylpropionic acid.
- $\alpha$ -Homovanillic acid** and its derivatives (TIEMANN and NAGAI), 1877, ii., 339.
- $\alpha$ -Homoveratric acid** (dimethylhomoprotocatechuic acid) (TIEMANN and MATS-MOTO), 1878, A., 503.
- Honey**, composition of (BROWN), 1878, A., 969.  
from Ethiopia, composition of (VILLIERS), 1879, A., 450.  
adulteration of (ANON.), 1881, A., 316.  
detection of adulterated or artificial (V. PLANTA), 1882, A., 1327.
- Honey-dew** (HOFFMANN), 1877, ii., 210.
- "Honig-thee"** (GREENISH), 1881, A., 441.
- Hopeite** (DAMOUR; DES CLOIZEAUX; FRIEDEL and SARASIN), 1881, A., 366.
- Hop-extract** (GRIESSMAYER), 1873, 659.
- Hops**, cultivation of (MÜNTZ), 1881, A., 931.  
comparative investigation of (HARZ), 1880, A., 417.  
constituents of (BISSELL), 1878, A., 328; (KÜHNEMANN), 1879, A., 171.  
of Southern Europe, constituents of (ČECH), 1880, A., 428; 1881, A., 483.  
bitter principle of (ETTI), 1878, A., 797.  
bitter principle and resin of (ISSLEIB), 1881, A., 101.  
tannin of (ETTI), 1876, i., 927; (BISSELL), 1878, A., 328.  
supposed action of, as a ferment (PASTEUR), 1877, ii., 352.  
properties of, as a ferment in bread-making in the United States (SACC), 1876, i., 811; 1877, i., 240.  
"Goldbleiben," a disease of (ANON.), 1882, A., 990.
- Hops**, spent, as fodder (KLEEMANN), 1879, A., 1050; (KELLNER), 1880, A., 344; (MÄCKER and WEIN), 1880, A., 502.  
valuation of (ČECH), 1881, A., 946.  
testing of (VOGEL), 1876, i., 780.  
analysis of (PORTER), 1878, A., 348; (SIEWERT), 1879, A., 957.  
estimation of pollen in (BRAUNGART), 1882, A., 1331.  
estimation of sulphurous acid in (GRIESSMAYER), 1874, 191.
- Horbachite** (KNOP), 1874, 34.
- Horn**, action of hydrochloric acid on (HORBACZEWSKI), 1880, A., 723.  
and gray-fish shells, composition of (WEINKE), 1877, i., 728.
- Horn mercury** from el Doctor, Mexico (WEBSKY), 1878, A., 710.
- Hornblende** (*amphibole*; *hexagonite*) (PETERSEN), 1873, 735; (DOELTER), 1881, A., 698.  
Goldsmith's, a variety of tremolite (KÖNIG), 1877, ii., 720.  
volume-constitution of (SCHRÖDER), 1874, 874.  
from Amelia Co., Virginia, composition of (MASSIE), 1881, A., 538.  
occurrence of, in Norway (BRÜGGER and REUSCH), 1876, ii., 52.  
in the melaphyre of Roda (DOELTER), 1876, i., 889.
- Hornblende-gabbro** and **granite** from Minnesota (STRENG and KLOOS), 1877, ii., 580, 720.
- Hornstone** (*noraculite*) or "Onachito Whetstone" from Arkansas, composition of (WAIT), 1874, 346.  
pseudomorph of, after calcite (GEINITZ), 1877, i., 693.  
decomposition of (SCHMIDT), 1879, A., 511.
- Horse.** See under Agricultural Chemistry.
- Horse beans**, growth of (POTT), 1880, A., 567.
- Horse-radish**, mineral constituents of (HILGER), 1878, A., 1000; 1879, A., 819.
- Hot springs.** See Mineral Water under Water.
- Huantajayite** (DOMEYKO), 1882, A., 472.
- Huber's reagent** (ANON.), 1877, ii., 352.
- Humic acid** (GUIGNET), 1879, A., 603.  
peculiar occurrence of (LETTENMAYER and LIEBERMANN), 1874, 704.  
action of, on atmospheric nitrogen (PREVOST), 1881, T., 370.
- Humite**, chemical composition of (VOM RATH), 1873, 142.



- Humite**, lievrite and chondrodite, isomorphism and chemical constitution of (WEBSKY), 1877, ii., 117.  
See also Magnesium silicate.
- Humus**. See under Agricultural Chemistry.
- Hyacinths**, mineral constituents in (VAN ROJEN and KRELAGE), 1880, A., 58.  
experiments on the growth of (VAN ROJEN and KRELAGE), 1880, A., 922.
- Hyalite** (BOŘICKÝ), 1874, 236; (ROSTER), 1878, A., 282.
- Hyalomelane** (WICHMANN), 1881, A., 701.
- Hyalotekite** (v. NORDENSKIÖLD), 1879, A., 22.
- Hydantoin** in plants (SCHULZE and BARBIERI), 1882, A., 243.  
thio-. See Thiolydantoin.
- Hydantoins**, aromatic (SCHWEBEL), 1878, A., 301, 798.
- Hydnocarpus Wightiana**, oil of (DYMOCK), 1876, ii., 207.
- Hydracids**, conversion of ketonic acids into, by sodium-amalgam (ROTHERG and ZINCKE), 1876, i., 926.  
constitution of, in solution, and their inverse reactions (BERTHELOT), 1873, 835.  
and halogens, heat evolved in the union of hydrocarbons with (BERTHELOT), 1876, i., 870.  
heat of combination of water and (BERTHELOT), 1873, 715; 1878, A., 363.  
reciprocal displacement of (BERTHELOT), 1873, 1192.  
compounds of, with ammonia (MAUMENÉ), 1880, A., 4.  
hydrates of (BERTHELOT), 1878, A., 363.
- Hydraacrylic acid** (*ethylenelactic acid*; *β-hydroxypropionic acid*; *β-lactic acid*) (WISLIGENUS), 1873, 490; 1874, 249; 1876, i., 561.  
conversion of acrylic acid into (LINNEMANN), 1876, i., 63.  
*β*-amido- (*isoserin*) (ERLENMEYER), 1880, A., 713.  
*α*-chloro- (WERIGO and MELIKOFF), 1879, A., 521; (MELIKOFF), 1880, A., 627, 800; 1882, A., 38.  
formation of (MELIKOFF), 1881, A., 154.
- Hydrangea arborescens** (BAIR), 1881, A., 916.
- Hydranthrone**, nitroso- (LIEBERMANN and LINDEMANN), 1881, A., 99.
- Hydrastine** (VAN DER ESPT), 1873, 919; (LLOYD), 1880, A., 170.
- Hydrastis canadensis** (*golden seal*) and its alkaloids (VAN DER ESPT), 1873, 919; (BURT), 1876, i., 937.
- Hydrated salts**. See Salts.
- Hydrates** (CHURCH), 1876, ii., 271.  
existence of definite, in the aqueous solutions of the acids (THOMSEN), 1874, 1052.  
formed under pressure and by sudden expansion (CAILLETET and BORDET), 1882, A., 1163.  
examination of, by the time method (HANNAY), 1877, ii., 381; 1879, T., 456.  
dehydration of, by the time method (RAMSAY), 1877, ii., 395.
- Hydratropic acid**. See *α*-Phenylpropionic acid.
- Hydrapoatropine**, action of potassium permanganate on (PESCI), 1882, A., 1217.
- o*-Hydrazidocinnamic acid** (FISCHER), 1881, A., 598.
- Hydrazidocinnamic anhydride**. See Amidocarbostyryl.
- Hydrazone compounds**, aromatic (FISCHER), 1875, 1034; 1876, i., 713; ii., 527; 1877, i., 619; ii., 887; 1878, A., 302.  
fatty (FISCHER), 1876, i., 576, 911; 1879, A., 450; 1880, A., 234.
- Hydrazinebenzenesulphonic acid**. See Phenylhydrazinesulphonic acid.
- Hydrazinebenzoic acid**. See Phenylhydrazine-*o*-carboxylic acid.
- Hydrazobenzene**. See *s*-Diphenylhydrazine.
- Hydrazobenzenesulphonic acid**. See Diphenylhydrazinesulphonic acid.
- Hydrazo-compounds**, molecular changes which they undergo when subjected to the action of mineral acids (SCHULTZ), 1881, A., 907; 1882, A., 1062.
- p*-Hydrazodiphenyl** (ZIMMERMANN), 1881, A., 175.
- Hydrazophenetol** (SCHMITT and MÖHLAU), 1879, A., 317.  
*dinitro*- (ANDREAE), 1880, A., 466.
- Hydrazophenylethyl**. See *s*-Phenylethylhydrazine.
- Hydrazotoluene**. See *s*-Di-*o*-tolylhydrazine.
- Hydrazotoluidine**. See *di*Amido-*s*-di-*o*-tolylhydrazine.
- Hydrindigotin**. See Indigo-white.
- Hydriodic acid**. See under Iodine.
- Hydriodoangelic acid**. See Valeric acid, iodo-.
- Hydriodocinnamic acid**. See *β*-Phenylpropionic acid, iodo-.

- Hydriodomethylcrotonic acid.** See Valeric acid, iodo-.
- Hydroanthracene nitrite** (LIEBERMANN and LANDSHOFF), 1881, A., 606.
- Hydroanthracenehydroquinone.** See Hydroxydihydroanthranol.
- Hydrobenzamide** (RADZISZEWSKI), 1877, ii., 887.  
constitution of, and its conversion into amarine (BORODIN), 1874, 273.  
action of hydrocyanic acid on (PLÖCHL), 1881, A., 168, 820.  
dihydrocyanide, and the action of hydrochloric acid on (PLÖCHL), 1881, A., 168, 820.
- Hydrobenzoin** (*stilbene alcohol*), constitution of (RADZISZEWSKI), 1873, 1037.  
action of acetic and phosphoric chlorides on (AMMANN), 1873, 1139.  
action of dilute sulphuric acid on (BREUER and ZINCKE), 1877, i., 460; 1878, A., 320; 1880, A., 116.  
oxidation of (FORST and ZINCKE), 1875, 1190.  
anhydride, and its reduction and oxidation (BREUER and ZINCKE), 1880, A., 117.  
dichlorides (ZINCKE), 1877, ii., 622; 1880, A., 115; (BREUER and ZINCKE), 1880, A., 117.  
action of alcoholic potash on (AMMANN), 1873, 1140.
- iso***Hydrobenzoin**, action of acetic and phosphoric chlorides on (AMMANN), 1873, 1140.  
action of dilute sulphuric acid on (BREUER and ZINCKE), 1877, i., 460; 1878, A., 320; 1880, A., 116.  
oxidation of (ZINCKE), 1880, A., 115.  
anhydride, and its oxidation and reduction (BREUER and ZINCKE), 1880, A., 117.  
carbonate (WALLACH), 1882, A., 853.  
dichloride (ZINCKE), 1880, A., 115.
- Hydrobenzoins** (FORST and ZINCKE), 1875, 453; 1876, ii., 634; (ZINCKE), 1876, ii., 634.  
physical isomerism of (ZINCKE), 1880, A., 118.  
compounds of (ZINCKE), 1880, A., 114.
- Hydrobilirubin** (*urobilin*) (THUDICHUM), 1875, 400; (LIEBERMANN), 1876, i., 407; (DISQUÉ), 1879, A., 170; (McMUNN), 1881, A., 1056; (CAPRANICA), 1882, A., 233.  
in the urine (ESOFF), 1876, ii., 108.  
preparation of (THUDICHUM), 1875, 397.  
identity of, with choletelin (STOKVIS; MALY), 1874, 993.
- Hydrobiliverdin** and spectrum of the alcoholic solution of (THUDICHUM), 1876, ii., 28.
- Hydrodibromazobenzene.** See *s*-Diphenylhydrazine, dibromo-.
- Hydrobromic acid.** See under Bromine.
- Hydrobromocumyl-acrylic and -crotonic acids** (PERKIN), 1877, ii., 661.
- Hydrobromoquercitol** (PRIENIER), 1879, A., 241.
- Hydrobromosulphobenzaldehyde** (BÖRTINGER), 1877, i., 468.
- Hydrobromosulphobenzoic acid** (BÖRTINGER), 1877, i., 468.
- Hydrobrucine** (SHENSTONE), 1881, T., 461.
- Hydrobutyramide.** See *Triisobutylidene-diamine*.
- Hydrocaffeic acid**, derivatives of (TIE-MANN and NAGAI), 1878, A., 579.
- Hydrocaffuric acid** (FISCHER), 1882, A., 217.
- Hydrocarbon**,  $C_{10}H_{16}$ , from diamylene (TUGOLESSOFF), 1880, A., 231.  
 $C_{10}H_{20}$  (ARMSTRONG and TILDEN), 1879, T., 745.  
 $C_{11}H_{10}$ , aromatic, from resin oil (KELBE), 1879, A., 467.  
 $C_{11}H_{18}$ , from animal tar (WEIDEL and CIAMICIAN), 1880, A., 404.  
 $C_{13}H_{20}$  (SESTINI and DANESI), 1882, A., 627.  
 $C_{14}H_{22}$ , from lactucone (FRANCHIMONT and WIGMAN), 1879, A., 469.  
 $C_{15}H_{16}$  (SÖLLSCHER), 1882, A., 1293.  
 $C_{18}H_{12}$ , from coal-tar (BURG), 1877, i., 96.  
 $C_{20}H_{16}$  (MORIN), 1881, A., 738.  
 $C_{22}H_{28}$  (CARNELLEY), 1880, T., 713.  
containing  $C_3H_2$  (PINNER), 1875, 1245.  
from the least volatile portions of coal-tar (RASENACK), 1874, 259.  
new, from vegetable fats (KÖNIG and KIESOW), 1873, 1215.  
solid, occurrence of, in the eruptive rocks of New Jersey, U.S.A. (RUSSELL), 1879, A., 896.  
from the Waratah Mine, New South Wales (LIVERSIDGE), 1881, A., 982.
- Hydrocarbons** produced in the distillation of crude fatty acids (CAHOURS and DEMARÇAY), 1875, 1244; 1876, i., 363.  
produced by the action of acids on cast-iron and steel (DUMAS), 1874, 971; (CLOËZ), 1874, 972; (WILLIAMS), 1874, 973.  
nature of, produced by the action of acids on white specular manganese cast-iron (CLOËZ), 1878, A., 481.

- Hydrocarbons**, formation of, by the action of water on a carbide of iron and manganese (CLOËZ), 1878, A., 716.
- produced by the action of methylic chloride on benzene in presence of aluminium chloride (ADOR and RILLIET), 1879, A., 228, 527.
- obtained as bye-products in the decomposition of levulinic acid by hydriodic acid (KEHRER and TOLLENS), 1881, A., 399.
- obtained from the homologues of cinnamic acid (PERKIN), 1877, ii., 660.
- derived from a double molecule of toluene, by elimination of hydrogen, action of heat on (BARBIER), 1877, i., 74.
- from betulin (PATERNO and SPICA), 1878, A., 569; (FRANCHIMONT and WIGMAN), 1879, A., 469.
- from clove oil (BECKETT and WRIGHT), 1876, i., 6.
- from colophony (RENARD), 1880, A., 893; 1881, A., 738; 1882, A., 737, 1179, 1301.
- from nutmeg oil (WRIGHT), 1873, 550.
- from orange-peel oil, action of chromic and nitric acids on (WRIGHT), 1873, 553.
- from *Pinus sylvestris* (TILDEN), 1878, T., 80.
- from petroleum (SCHORLEMMER), 1873, 319.
- from American petroleum (PRUNIER), 1879, A., 447, 1025; (BEILSTEIN and KURBATOFF), 1881, A., 159.
- from American and Caucasian petroleum, decomposition of, at low temperatures (GUSTAVSON), 1882, A., 27, 374.
- from purpurogallin (DE CLERMONT and CHAUTARD), 1882, A., 1066.
- isomeric, with anthracene (GRAEBE), 1873, 175; (SCHMIDT), 1873, 176; (FITTIG and OSTERMAYER), 1873, 177, 892.
- pyrogenic (BARBIER), 1877, i., 70.
- new modes of forming (PFANKUCH), 1873, 363; (YOUNG), 1873, 956.
- synthesis of (FRIEDEL and CRAFTS), 1877, ii., 725; (FRIEDEL), 1877, ii., 864; (LANDOLPH), 1878, A., 721.
- fundamental, production of, by the electric spark (TRUCHOT), 1878, A., 210.
- isomeric, constitution of (THOMSEN), 1880, A., 840.
- Hydrocarbons**, fluorescent relations of certain, found in petroleum distillates (MORTON), 1873, 235, 590; 1874, 14.
- heats of combustion of (MENDELÉEFF), 1882, A., 916.
- gaseous, heat of combustion of the principal (BERTHELOT), 1880, A., 786.
- heats of combustion and formation of (THOMSEN), 1880, A., 785.
- heat of formation of (THOMSEN), 1880, A., 840.
- pyrogenic, thermal formation of (BERTHELOT), 1881, A., 343.
- heat evolved in the union of, with hydracids and halogens (BERTHELOT), 1876, i., 870.
- volatile petroleum, combustion of, in oxygen (GUNSBERG), 1878, A., 916.
- brominated, action of heat on (MERZ and WALL), 1876, ii., 503.
- new method of testing the inflammability of (VAN DER WEYDE), 1873, 532.
- ultimate action of chlorine on (KRAFT and MERZ), 1876, i., 539.
- action of metallic chlorides at a high temperature on (SMITH), 1876, ii., 30; 1877, ii., 551.
- action of platinum wire on (COQUILLION), 1875, 1188; 1879, A., 302.
- action of platinum and palladium on (COQUILLION), 1873, 1214; 1877, ii., 831.
- of the formula  $C_{10}H_{16}$ , action of sulphuric acid on (ARMSTRONG and TILDEN), 1879, T., 733.
- action of aqueous vapour on (COQUILLION), 1878, A., 773.
- limited oxidation of (BERTHELOT), 1875, 439.
- polymerisation of (BUTLEROFF and GORJAINOFF), 1873, 873.
- acetylenic, preparation of (HENRY), 1874, 975.
- and their derivatives, atomic volume and specific gravity of (HERMANN), 1878, A., 640.
- direct addition of water to (KUTSCHEROFF), 1881, A., 883.
- aromatic, new series of (ZINCKE), 1873, 631; (GOLDSCHMIDT), 1882, A., 202.
- synthesis of (GOLDSCHMIDT), 1882, A., 952, 1196.
- formation of, by dry distillation (JACOBSEN), 1877, ii., 445.
- condensed, convenient method of obtaining (SMITH), 1876, ii., 393.

- Hydrocarbons**, aromatic, spectra of (HARTLEY and HUNTINGTON), 1880, A., 201.
- Zincke's, the relative positions of the side chains in (RADZISZEWSKI), 1874, 470.
- action of chloro- $\alpha$ -dinitrobenzene on (WILLGERODT), 1878, A., 570.
- action of benzylic chloride on (ZINCKE), 1873, 272.
- bromination of, in presence of aluminium bromide (GUSTAVSON), 1877, ii., 599; 1878, A., 972; 1879, A., 142; 1880, A., 370; 1881, A., 398.
- chlorination of, in presence of aluminium chloride (GUSTAVSON), 1879, A., 785; 1880, A., 370; 1881, A., 398.
- action of iodine on (SCHÜTZENBERGER), 1873, 498.
- action of zinc on a mixture of, with aromatic halogen compounds (ZINCKE), 1873, 632.
- oxidation of substitution-products of (REMSEN and HALL), 1882, A., 186; (REMSEN and NOYES), 1882, A., 1196.
- reduction of (BERTHELOT), 1878, A., 48.
- reactions of typical halogenated (MERZ and SCHELNBERGER), 1876, i., 241.
- introduction of, into ketonic and aldehydic acids (BÖTTINGER), 1881, A., 814, 1035.
- and acid chlorides, ketones from (GRUCAREVICH and MERZ), 1873, 635, 1233; 1874, 263.
- compounds of, with aldehydes (v. BAEYER), 1873, 501.
- compounds of, with aldehydes and alcohols (v. BAEYER), 1873, 884.
- compounds of, with chloroacetaldehyde (HEPP), 1875, 361.
- oxidation of, in the animal organism (NENCKI and GIACOSA), 1881, A., 632.
- characteristic colour reactions produced by the action of antimony or bismuth trichloride on (SMITH), 1879, A., 831.
- unsaturated, resulting from the decomposition of American petroleum (PRUNIER), 1879, A., 447, 1025.
- formation of, from the addition-products of unsaturated acids (FITTIG), 1879, A., 376.
- Hydrocarbons**, unsaturated, action of nitrous acid on (TÖNNIES), 1879, A., 35.
- action of nitrosyl chloride on (TÖNNIES), 1879, A., 517.
- action of oxygen on the bromo-derivatives of (DEMOLE), 1881, A., 142.
- oxidation of chloro-, bromo- and chlorobromo-substituted (DEMOLE and DÜRR), 1878, A., 846.
- spectroscopic method of discovery of minute quantities of the vapour of, in a gaseous mixture (A. and G. DE NEGRI), 1876, ii., 659.
- in mines, estimation of (COQUELION), 1876, ii., 428; 1877, ii., 806; 1878, A., 843.
- See also Olefines and Paraffins.
- Hydrocarbon oils**, separation of, from fat oils (ALLEN), 1882, A., 108.
- Hydrocarbon radicles**, bivalent, metallic compounds containing (SAKURAI), 1880, T., 658; 1881, T., 485; 1882, T., 360.
- Hydrocarbostyryl**. See Dihydrocarbostyryl.
- Hydrocarpol** (OUDEMANS), 1874, 73.
- Hydrocastorite** (GRATTAROLA), 1878, A., 119.
- Hydroceles**, nature of the albumins in (BÉCHAMP), 1879, A., 550.
- Hydrocellulose** and its derivatives (GIRARD), 1879, A., 779; 1882, A., 378.
- conversion of, into pyroxylin, and its nitration (GIRARD), 1879, A., 911.
- Hydrocerussite** (*plumbonacrite*) (v. NORDENSKJÖLD), 1879, A., 22.
- Hydrochloric acid**. See under Chlorine.
- Hydrochloroquercitol**, *mono*-, and *tri*- (PRUNIER), 1879, A., 241.
- Hydrochloroxycitraconic acid** (MORAWSKI), 1875, 1253.
- Hydrochrysamide** (*tetramidochrysazin*) (LIEBERMANN), 1877, i., 611.
- Hydrocinchonidine** (FORST and BÖHRINGER), 1881, A., 830; 1882, A., 982.
- Hydrocinchonine** (ZORN), 1874, 484.
- Hydrocinnamylacrylic acid**. See Hydrostyrylacrylic acid.
- Hydrocinnamic acid**. See  $\beta$ -Phenylpropionic acid.
- "**Hydrocitric acid**" (KAEMMERER), 1875, 1178; (CLAUS), 1875, 1252.
- Hydrocærulignone** (LIEBERMANN), 1873, 71, 1033; 1874, 76.
- action of strong sulphuric acid on (FISCHER), 1875, 1021.



- Hydrocærulignone** of the ethyl series (V. HOFMANN), 1878, A., 871.  
 potassium derivative of (EWALD), 1879, A., 253.  
*di-* and *tetra*-bromo-, and *di*-chloro- (HAYDUCK), 1876, ii., 516.
- Hydrocollidine**, and its salts (CAHOURS and ETARD), 1881, A., 825.
- Hydroconquinine**. See Hydroquinidine under Alkaloids.
- Hydrocotarnine**. See under Alkaloids.
- Hydrocotoin** and *mono-* and *di*-bromo- (V. JOBST and HESSE), 1877, ii., 202; 1880, A., 327.
- Hydrocotone**, and *dinitro-* (V. JOBST and HESSE), 1880, A., 327.
- Hydro-*o*-coumaric acid** (*p*-hydroxy- $\beta$ -phenylpropionic acid; *melilotic acid*) (PLIPSON), 1878, A., 576.
- Hydro-*p*-coumaric acid** (*p*-hydroxy- $\beta$ -phenylpropionic acid) (BAUMANN), 1882, A., 514.  
 in the animal body (BAUMANN), 1882, A., 514.  
 in human urine (BAUMANN), 1880, A., 648.  
 formation of, from tyrosine (BAUMANN), 1880, A., 254, 649.
- Hydrocumenylacrylic acid**. See *p*-Cumylpropionic acid.
- Hydrocyanaldine** (ERLENMEYER and PASSAVANT), 1880, A., 313.
- p*-Hydrocyanaldine** (JOURDAN), 1880, A., 313.
- Hydrocyanic acid**. See under Cyanogen.
- Hydrocyanobenzide** (*benzoylazotide*) (PLÖCHL), 1881, A., 820.
- Hydrocyanocarbodiphenylimide** (LAUBENHEIMER and GÖRING), 1881, A., 163.
- "Hydrocyano-*pararosaniline*"** (E. and O. FISCHER), 1879, A., 385.
- Hydrocyanorosolic acid** and *tetra*-bromo- (GRAEBE and CARO), 1876, i., 590.
- Hydrodiazobenzoic acid** (GRIESS), 1877, i., 475.
- Hydroethylcrotonic acid**. See Hexoic acid (*diethylacetic acid*).
- Hydroeugenol**, chloramido-, and its hydrochloride (WESELSKY and BENEDIKT), 1882, A., 1201.
- Hydro-ferri-** and **-ferro-cyanic acids**. See Ferri- and Ferro-cyanic acids.
- Hydroferulic and hydroisoferulic acids** (TIEMANN and NAGAI), 1878, A., 580.
- Hydrofluoboric acids**, two new (LANDOLPH), 1880, A., 28.
- Hydrofluoric acid and hydrofluosilicic acid**. See under Fluorine.
- Hydrogallein** (V. BUCHKA), 1882, A., 59.
- Hydrogardenic acid** (STENHOUSE and GROVES), 1879, T., 694.
- Hydrogen**, emission of, by plants (POL-LACCI), 1876, ii., 540.  
 emission of, during the vegetation of mildew (MISSAGHI), 1876, i., 958.  
 allotropic modifications of (THOMSEN), 1880, A., 89.  
 active (BÖTTGER), 1874, 222.  
 nascent, non-existence of (TOMMASI), 1880, A., 2.  
 nascent and occluded (GLADSTONE and TRIBE), 1878, T., 306.  
 preparation of (LOEWE), 1874, 1056.  
 how to avoid explosions in the preparation of (FRESENIUS), 1874, 538.  
 purification of (VIOLETTE), 1874, 221; (SCHOBIG), 1877, i., 271; (VARENNE and HEBRÉ), 1878, A., 111; (LIONET), 1880, A., 2.  
 spectrum of. See under Photochemistry.  
 refraction-equivalent of (LANDOLT), 1873, 460.  
 refraction-equivalent of, in organic compounds (GLADSTONE), 1881, A., 958; 1882, A., 133.  
 electrolysis with evolution of, at both poles (ELSÄSSER), 1877, i., 678; 1878, A., 545.  
 influence of electricity on mixtures of carbon monoxide and (P. and A. THENARD), 1873, 864.  
 diamagnetism of condensed (BLONDLOT), 1877, ii., 820.  
 thermochemistry of (FAVRE), 1874, 1048.  
 thermal conductivity and diathermancy of (BUFF), 1878, A., 261.  
 atomic heat of, in its combination with palladium (BEKETOFF), 1879, A., 590.  
 heat of combustion of oxygen and (V. THAN), 1877, ii., 690; (SCHULLER and WARTHA), 1878, A., 4; (BERTHELOT), 1878, A., 5; (MALLARD and LE CHATELIER), 1882, A., 453.  
 heat evolved during the combination of, with metals (MOUTIER), 1875, 415, 1151.  
 ignition point of (MITSCHERLICH), 1879, A., 587.  
 ignition of, in ascending soap-bubbles (REMSEN), 1878, A., 370.  
 spontaneous ignition of, by finely divided zinc (HOFMANN), 1878, A., 769.

**Hydrogen**, temperature of the flame of (FRANKLAND and THORNE), 1878, T., 94.  
 deviation of, from Mariotte's law (BUDDE), 1874, 646.  
 compressibility of, at high temperatures (AMAGAT), 1873, 239.  
 liquid, density of, in presence of inert liquids (CAILLETET and HAUTEFEUILLE), 1881, A., 874.  
 combined with metals, density of (TROOST and HAUTEFEUILLE), 1874, 768.  
 affinity of, for the non-metallic elements (THOMSEN), 1873, 126, 838.  
 and carbonic oxide, relative affinity of oxygen for (v. MEYER), 1876, ii., 40; (HORSTMANN), 1878, A., 8; 1879, A., 436.  
 chemical equilibrium between iodine and (LEMOINE), 1875, 608; 1876, i., 38; 1878, A., 265.  
 action of porous bodies on mixtures of iodine and (LEMOINE), 1878, A., 266.  
 and gaseous iodine, action of mass on (LEMOINE), 1878, A., 266.  
 action of sunlight on mixtures of iodine and (LEMOINE), 1878, A., 266.  
 agglomeration of finely divided metal by (TRIBE), 1874, 415.  
 absorption of, by metals (TROOST and HAUTEFEUILLE), 1875, 610.  
 occluded, in so-called explosive antimony (BÖTTGER), 1876, ii., 48.  
 occlusion of, by copper (GLADSTONE and TRIBE), 1878, T., 148; (JOHNSON), 1879, T., 232.  
 occluded by copper, estimation of, with special reference to organic analysis (THUDICHUM and HAKE), 1876, ii., 251.  
 occlusion of, by copper spirals (LIETZENMAYER), 1878, A., 377.  
 occlusion of, by iron (CAILLETET), 1875, 425.  
 absorption of, by palladium (SMITH), 1875, 424.  
 occluded by palladium, condition of, as indicated by the specific heat of the charged metal (ROBERTS-AUSTEN and WRIGHT), 1873, 112.  
 See also Hydrogenium and Palladium, hydrogenised.  
 absorption of, under the influence of the dark discharge (BERTHELOT), 1876, ii., 616.  
 absorption of, by platinum (BERTHELOT), 1882, A., 1022.  
 absorption of, by platinum black (FAVRE), 1874, 15, 1048, 1050.

**Hydrogen**, action of, on solutions of copper, gold, mercury, palladium, and platinum (RUSSELL), 1874, 11.  
 action of, on silver nitrate (RUSSELL), 1874, 3; (PELLET), 1874, 867; (BEKETOFF), 1875, 425; (LEEDS), 1877, i., 282.  
 action of, on sodium oxide (BEKETOFF), 1879, A., 689.  
 and nitrogen, absorption of, by organic matters (BERTHELOT), 1876, ii., 616.  
 analogies between the action of the copper-zinc couple and of occluded and nascent (GLADSTONE and TRIBE), 1878, T., 306.  
 in the nascent and occluded conditions, action of (GLADSTONE and TRIBE), 1879, T., 172.  
 action of bacteria on (HATTON), 1881, T., 249.  
 action of, on acetylene and ethylene in contact with platinum-black (DE WILDE), 1874, 882.  
 behaviour of the isomeric benzonitrilides to (STÖVER), 1874, 806.  
 action of nascent, on bitter almond oil (AMMANN), 1873, 1139.  
 action of, on bismuth tribromide and trichloride (MUIR), 1876, i., 144.  
 action of, on tetrabromocaproic acid (KACHEL and FITTIG), 1874, 44.  
 behaviour of  $\alpha$ -dichloropropionic acid to nascent (BECKURTS and OTTO), 1877, ii., 181.  
 action of nascent, on cinchona alkaloids in acid solutions (HOWARD), 1873, 1178.  
 action of nascent, on narceine (BECKETT and WRIGHT), 1875, 701.  
 action of nascent, on narcotine (BECKETT and WRIGHT), 1875, 582.  
 reaction between nitric and nitrous oxides and, in presence of spongy platinum (WRIGHT), 1881, T., 357.  
 nascent and occluded, action of, on nitric and sulphuric acids (GLADSTONE and TRIBE), 1879, T., 172.  
 action of nascent, on thiobenzamide (BERNTSEN), 1877, ii., 887.  
 action of nascent, on vanillin (TIE-MANN), 1876, i., 75.  
 reducing action of (TOMMASI), 1878, A., 197.  
 reduction of metallic oxides by, as a means for the separation and estimation of metals (MÜLLER-ERZBACH), 1875, 381; 1880, A., 298.  
 combination of, with chlorine in the absence of light (MELSENS), 1873, 724.

**Hydrogen**, combination of, with cyanogen (BERTHELOT), 1879, A., 909.  
 combination of, with cyanogen under the influence of the silent electric discharge (BOILLOT), 1873, 865.  
 combination of, with oxygen by the electric discharge (DEHÉRAIN and MAQUENNE), 1882, A., 360.  
 formation of ozone in the combustion of, in oxygen (BÖTTGER), 1874, 653.  
 replacement of, in benzene (HÜBNER), 1875, 1257.

changes in the position of, in the carbon skeleton of organic compounds (HEINTZ), 1873, 152.

**Hydrogen**, detection and estimation:—  
 ammoniacal and hydroxylic, test for the absence of (JAPP and WILCOCK), 1880, T., 665.

fractional combustion of marsh-gas and (HEMPEL), 1879, A., 747.

estimation of, in gaseous mixtures (HEMPEL), 1879, A., 670.

simultaneous estimation of carbon, nitrogen and (HEMPEL), 1879, A., 278.

**Hydrogen** bromide. See Hydrobromic acid under Bromine.

chloride. See Hydrochloric acid under Chlorine.

cyanide. See Hydrocyanic acid under Cyanogen.

fluoride. See Hydrofluoric acid under Fluorine.

iodide. See Hydriodic acid under Iodine.

**Hydrogen peroxide** (*hydrogen dioxide*) (LE BLANC), 1873, 242; (SCHÖNE), 1878, A., 931; 1879, A., 353, 592; (MASON), 1881, A., 474.

atmospheric (CARIUS), 1875, 128; (SCHÖNE), 1875, 418; 1878, A., 552, 703; (KERN), 1878, A., 267.

presence of, in plants (CLERMONT), 1875, 1216; (BELLUCCI), 1876, i., 954; 1879, A., 665.

formation of (BERTHELOT), 1878, A., 372; (LEEDS), 1880, A., 847.

formation of, in oxidation processes (RADULOWITSCH), 1874, 433; 1882, A., 798; (TRAUBE), 1882, A., 795.

formation of, by the explosion of a mixture of oxygen and hydrogen (BÖTTGER), 1879, A., 103.

formation of, during combustion (SCHULLER), 1882, A., 691.

formation of, by the action of moist phosphorus on air (LEEDS), 1879, A., 881; 1880, A., 699, 847; 1881, A., 506; (MCLEOD), 1880, T., 118; (KINGZETT), 1880, T., 792; A., 3.

**Hydrogen peroxide** (*hydrogen dioxide*), production of, by hydrogenised palladium (LEEDS), 1881, A., 898.

formation of, during the slow oxidation of essential oils (RADULOWITSCH), 1874, 433; 1882, A., 798; (KINGZETT), 1874, 511; 1875, 210; 1876, i., 243; 1877, i., 183; 1880, A., 51.

energy due to the formation of (FAIRLEY), 1877, i., 10.

preparation of (THOMSEN), 1874, 433.

electrolysis of (SCHÖNE), 1879, A., 878; (BERTHELOT), 1882, A., 1157.

stability of (BERTHELOT), 1881, A., 16.

action of, on the alcohols (RENARD), 1880, A., 28.

action of chlorine, bromine and iodine, and of hydrogen sulphide and of ethylic alcohol on (FAIRLEY), 1877, i., 22.

reaction of, with metals (FAIRLEY), 1877, i., 1, 125.

action of, on ammoniacal nickel sulphate (WATSON), 1882, A., 1262.

action of potassium iodide on (SCHÖNE), 1880, A., 606.

action of, on silver oxide and metallic silver (BERTHELOT), 1880, A., 441.

decomposition of, in presence of alkalis and alkaline earths (SCHÖNE), 1880, A., 606.

decomposition of, by cobalt, lead, and manganese oxides (BAYLEY), 1879, A., 501.

decomposition of, by filter-paper, ptyalin, and pepsin (SCHMIDT), 1873, 186.

as a bleaching agent (EBELL), 1882, A., 1245.

as an oxidizing agent (THOMSEN), 1875, 225.

formation of ozone by the contact of plants with (COHNÉ), 1876, ii., 539.

compounds of, and heat of decomposition of (BERTHELOT), 1880, A., 602.

tests for (ANON.), 1874, 601.

estimation of (KINGZETT), 1880, T., 802, 805.

estimation of, by colorimetric methods and by hydriodic acid, indigo, and by measuring the oxygen evolved (SCHÖNE), 1879, A., 743.

estimation of, by permanganate (SCHÖNE), 1879, A., 740.

estimation of active oxygen in (BERTRAND), 1880, A., 741.

**Hydrogen** phosphide. See under Phosphorus.

- Hydrogen** platinochloride (THOMSEN), 1877, ii., 276.  
selenide. See under Selenium.  
sulphate. See Sulphuric acid under Sulphur.  
sulphide. See under Sulphur.
- Hydrogen organic compounds**:—  
methylic salts. See Methylic hydrogen salts.  
potassium tartrate (*cream of tartar*). See Tartaric acid, potassium hydrogen salt of, and Argol.
- Hydrogen-carbon**, action of, on potassium chlorate and ferricyanide (GLADSTONE and TRIBE), 1878, T., 310.
- Hydrogenium**, physical constants of (DEWAR), 1874, S66.  
See also Hydrogen, absorption of, by palladium, and Palladium, hydrogenised.
- Hydrohæmatite**. See Turgite.
- "Hydrohexaglyoxal"** (SCHIFF), 1874, 571.
- Hydroisatin**. See Dioxindole.
- Hydromalonylcarbamide**, dibromo- (GRIMAU), 1876, i., 70.
- Hydromellitic acid** (*hydromellitic acid*) obtained by the electrolysis of an alkaline solution with carbon electrodes (BARTOLI and PAPASGLI), 1882, A., 850.
- Hydromellone** (JOUSSELIN), 1878, A., 132.
- Hydrometallurgy**, use of bromine in (WAGNER), 1876, i., 741; ii., 214.
- Hydrometer**, verification of Baumé's (BERTHELOT, COULIER and D'ALMEIDA), 1874, 122.
- Hydrometer-tube**, for determining specific gravity (PILE), 1873, 131.
- Hydromethylketole**. See 2'-Methyl-dihydroindole.
- Hydromethyl-*p*-oxyphenylacrylic acid**. See *p*-Methoxy- $\beta$ -phenylpropionic acid.
- Hydromuconic acid** (LIMPRICHT), 1873, 622; (BECKURTS and OTTO), 1878, A., 290.  
bromo- (LIMPRICHT), 1873, 622.
- Hydronaphthaquinone**. See Naphthaquinol.
- Hydro-*p*-oxybenzoin**. See Di-*p*-hydroxyhydrobenzoin.
- Hydro-oxycamphoronic acid** (KACHLER), 1878, A., 513; (BALLÓ), 1881, A., 438.
- Hydrophane**, and transparent hydrated silica (MONIER), 1878, A., 770.
- Hydrophthalic acid**, etherification of (MESSCHUTKIN), 1882, A., 381.
- Hydrophthalide** (HESSERT), 1878, A., 419.
- Hydropiperic acid**, reactions of the ammonium salt of (LORENZ), 1881, A., 728.  
dibromo- (FITTIG and MIELCK), 1874, 900.  
See also Methylene-dioxyphenylangelic acid.
- Hydropolyporic acid** and its salts (STAHLSCHMIDT), 1879, A., 383.
- Hydropyrocinchonic acid**. See *s*-Dimethylsuccinic acid.
- Hydropyromellitic and isohydropyromellitic acids** (v. BAEYER), 1873, 755.
- Hydroproxanthin** (HILL), 1878, A., 518.
- Hydroquinidine** (*hydroconquinine*) and its salts (FORST and BÖHRINGER), 1882, A., 74, 982, 1306; (HESSE), 1882, A., 1113.
- Hydroquinine**, and its salts (HESSE), 1882, A., 1113.
- Hydro-quinizarin** and -quinizarol (LIEBERMANN and TOPF), 1882, A., 856.
- Hydroquinone**. See Quinol.
- Hydrosantonic acid** and its amide (CANNIZZARO), 1877, i., 470.  
action of phosphorus tribromide on (CANNIZZARO and CARNELUTTI), 1881, A., 286.
- "Hydrosantonin"** (CANNIZZARO and SESTINI), 1873, 1232.
- Hydrosorbic acid**. See Hexenoic acid.
- Hydrostyrylacrylic acid** (*hydrocinna-menylacrylic acid*) (PERKIN), 1877, i., 405; (v. BAEYER and JACKSON), 1880, A., 407.
- Hydrotachylite** of Rossdorf, Darmstadt (PETERSEN), 1873, 1211.
- Hydrothiodiphenylhydantoin**. See Diphenylethylene- $\psi$ -thiocarbamide.
- Hydrotiglic acid**. See Valeric acid.
- Hydrotitanite**, a new mineral (KÖNIG), 1877, ii., 173.
- Hydrotoluquinone**. See Toluquinol.
- Hydrotropine iodide** (LADENBURG), 1881, A., 263.
- Hydrovanilloin** (TIEMANN), 1876, i., 75.
- Hydroxamic acids**, distillation of (FIESCHEL), 1875, 751.  
ethers of (LOSSEN and ZANNI), 1877, i., 188.  
ethers of aromatic (EISELER), 1875, 766.  
See also Hydroxylamine.
- Hydroxonic acid** (PONOMAREFF), 1879, A., 227, 461.



- Hydroxy-acids**, action of chloral and bromal on (WALLACH), 1877, i., 59.  
 action of chloroform on aromatic, in alkaline solution (REIMER and TIEMANN), 1877, i., 83.  
 oxidation of (LEY), 1877, ii., 309; (ERLENMEYER), 1877, ii., 582.  
 boiling points of ethereal salts of (SCHREINER), 1879, A., 522.
- Hydroxyacrylic acid**. See Glycidic acid.
- Hydroxyadipic acid**, preparation of (KÖNIG), 1879, A., 706.
- Hydroxyallyldipiperidine** (*dipiperallyl-alkumine*) (LADENBURG), 1881, A., 1158.
- Hydroxyamylenenaphthaquinone**. See Lapachol.
- $\alpha$ -Hydroxyangelic acid**,  $\gamma$ -chloro- (*chloroangelic acid*), and its amide (PINNER and KLEIN), 1879, A., 42.  
*trichloro-* (PINNER), 1874, 786; (PINNER and BISCHOFF), 1876, i., 556.
- Hydroxyanthracene**. See Anthrol.
- $\alpha$ -Hydroxyanthranol** (LIEBERMANN and SIMON), 1881, A., 823.
- Hydroxyanthraquinone**, amido- (BOURCART), 1880, A., 263.  
*dibromo-* (v. BAAYER), 1877, i., 308; 1880, A., 658.  
*imido-* (BÖTTGER and PETERSEN), 1873, 390.
- 1-Hydroxyanthraquinone** (*erythroxyanthraquinone*) (v. BAAYER and CARO), 1875, 67; (v. PERGER), 1879, A., 253, 724; (v. BAAYER), 1880, A., 654; (LIEBERMANN and TOPF), 1882, A., 856.  
 formation of, from phenolphthalein (v. BAAYER), 1880, A., 658.  
 2-amido- ( *$\beta$ -alizarinamide*) (v. PERGER), 1879, A., 253.
- 2-Hydroxyanthraquinone** (LIEBERMANN), 1873, 275; 1877, i., 609; (CLAUS), 1875, 760, 891; (WILLGERODT), 1876, i., 249.  
 preparation of (SIMON), 1881, A., 608.  
 decomposition of, by potash (LIEBERMANN and DEHNST), 1880, A., 49.  
 reduction of (LIEBERMANN and SIMON), 1882, A., 857.
- 1-amido-** ( *$\alpha$ -alizarinamide*) (LIEBERMANN), 1877, i., 612.  
**1:3-dinitro-**, and its salts (SIMON), 1881, A., 608.
- Hydroxyanthraquinones**, conversion of, into one another (LIEBERMANN and FISCHER), 1876, i., 248.
- Hydroxyanthraquinonecarboxylic acid** (HAMMERSCHLAG), 1878, A., 323.
- Hydroxyanthraquinonesulphonic acids** and amido- (v. PERGER), 1879, A., 255.
- Hydroxyazobenzene**. See Benzenazo-phenol under Azo.
- Hydroxyazobenzenesulphonic acid**. See Hydroxybenzenazo-phenol under Azo.
- o*-Hydroxybenzaldehyde**. See Salicylaldehyde.
- p*-Hydroxybenzaldehyde** (BÜCKING), 1876, ii., 276; (TIEMANN and REIMER), 1876, ii., 632; 1877, i., 84; 1878, A., 226.  
 action of, on benzil, in presence of ammonia (JAPP and ROBINSON), 1882, T., 326.  
 action of, on phenanthraquinone (JAPP and STREATFEILD), 1882, T., 150.  
 colouring matter from, obtained by the action of oxalic and sulphuric acids on (LIEBERMANN), 1878, A., 887.  
 derivatives of (TIEMANN and HERZFELD), 1877, ii., 893; (HERZFELD), 1878, A., 65.  
 homologue of (TIEMANN and SCHOTTEN), 1878, A., 875.  
 3-bromo-, 3-chloro-, and 3-iodo- (HERZFELD), 1878, A., 423.  
 3-nitro- (MAZZARA), 1877, ii., 781; (HERZFELD), 1878, A., 65.
- Hydroxybenzamide** (SCHULERUD), 1881, A., 42.
- Hydroxybenzanilides**, preparation of (KUPFERBERG), 1878, A., 320.
- Hydroxybenzenazo-**. See under Azo.
- o*-Hydroxybenzenyldiamidophenanthrene** (*anhydrosalicyldiamidophenanthrene*) (JAPP and STREATFEILD), 1882, T., 150.
- p*-Hydroxybenzenyldiamidophenanthrene** (*anhydro-p-hydroxybenzoyldiamidophenanthrene*) and its acetyl derivative (JAPP and STREATFEILD), 1882, T., 151.
- o*-Hydroxybenzenylamidophenyl mercaptan** (v. HOFMANN), 1880, A., 887.
- o*-Hydroxybenzenyl-*o*-phenylenediamine** (*anhydrosalicyldiamidobenzene*) (MENSCHING), 1880, A., 556; (JAPP and STREATFEILD), 1882, T., 149; (HÜBNER), 1882, A., 504.
- Hydroxybenzoic acid** (EMMERLING and OPPENHEIM), 1876, ii., 85; (BARTH), 1878, A., 574.  
 formation of, from chloronitrophenol melting at 41° (BEILSTEIN and v. KUHLEBERG), 1873, 72.  
*trisulpho-*. See Hydroxytrisulphobenzoic acid.

- Hydroxybenzoic acid, thio-**. See Thiohydroxybenzoic acid.
- o*-Hydroxybenzoic acid**. See Salicylic acid.
- m*-Hydroxybenzoic acid** (FITTIG), 1878, A., 980.  
 etherification of (MENSCHUTKIN), 1882, A., 487.  
 aldehydohydroxybenzoic acids from (TIEMANN and LANDSHOFF), 1879, A., 927.  
 a condensation-product from (BARTH and SENHOFER), 1874, 266.  
 2- and 6 nitro- (GRIESS), 1879, A., 247.  
 4-nitro- (GRIESS), 1873, 178.  
*trinitro*- (SCHARDINGER), 1876, i., 584.
- p*-Hydroxybenzoic acid** (KOLBE), 1874, 373; (KUPFERBERG), 1878, A., 318; (DOEBNER and STACKMANN), 1878, A., 321; (DOEBNER), 1880, A., 240; (ZULKOWSKI), 1882, A., 1291.  
 formation of (v. PECHMANN), 1875, 79.  
 formation of, from phenol (HASSE), 1878, A., 416; (OST), 1880, A., 43.  
 preparation of, from salicylic acid (KOLBE), 1875, 459.  
 synthesis of (KOLBE), 1874, 477.  
 action of alkalis on (OST), 1876, i., 252.  
 action of chloroform on, in alkaline solution (REIMER and TIEMANN), 1877, i., 83.  
 conversion of, into salicylic acid (KUPFERBERG), 1876, i., 926.  
 two anhydrides of (KLEPL), 1882, A., 1293.  
 metallic salts, amide and nitrile of (HARTMANN), 1877, ii., 895.  
 sodium and thallium salts of (KUPFERBERG), 1878, A., 318.  
 3-chloro- (HASSE), 1878, A., 416.  
 3-nitro- (GRIESS), 1873, 178; (HASSE), 1878, A., 416; (GRUBER), 1879, A., 644.
- Hydroxybenzoic acids, *o*-, *m*-, and *p*-** (v. DEN VELDEN), 1877, ii., 337; (SMITH), 1878, A., 71.  
 etherification of (MENSCHUTKIN), 1882, A., 487.  
 solubility of, in water (OST), 1878, A., 796.  
 action of sodium amalgam on (v. DEN VELDEN), 1877, ii., 338.  
 decomposition of the calcium salts of, by dry distillation (GOLDSCHMIEDT and HERZIG), 1882, A., 616.
- m*-Hydroxybenzonitrile** (GRIESS), 1875, 1261; (SMITH), 1878, A., 71.
- p*-Hydroxybenzophenone** (*p*-benzoylphenol) (DOEBNER and STACKMANN), 1878, A., 321; (RENNIE), 1882, T., 227; (DOEBNER and WEISS), 1882, A., 177; (DOEBNER), 1882, A., 508.  
 acetate and benzoate (DOEBNER and STACKMANN), 1878, A., 321.
- o*-Hydroxybenzylic alcohol**. See Saligenin.
- m*-Hydroxybenzylic alcohol** (v. DEN VELDEN), 1877, ii., 338.
- $\beta$ -Hydroxy- $\alpha$ -butyric acid** (WISLICHENUS, EHRLICH and ROHRBECK), 1876, i., 369.
- o*-Hydroxybenzylidene-*m*-amidobenzoic acid** (SCHIFF), 1882, A., 303.
- $\omega$ -Hydroxybenzylpyrotartaric acid**, lactone of (FITTIG), 1882, A., 190.
- $\omega$ -Hydroxybenzylsuccinic acid**, lactone of (FITTIG), 1882, A., 190.
- Hydroxyisobutylacetic acid**. See Hydroxyhexoic acid.
- $\alpha$ -Hydroxybutylformamide**. See  $\alpha$ -Hydroxyisovaleramide.
- Hydroxyisobutylformic acid**. See  $\alpha$ -Hydroxyisovaleric acid.
- Hydroxybutyric acid, thio-** (DUVILLIER), 1878, A., 489.
- $\alpha$ -Hydroxybutyric acid** (POPOFF), 1875, 880; (CONRAD), 1881, A., 577; (KASCHIRSKY), 1882, A., 37.  
 synthesis of (PRZYBYTEK), 1877, i., 60.  
 amido-acids of (DUVILLIER), 1881, A., 87.
- $\beta$ -Hydroxybutyric acid and its salts** (BALBIANO), 1878, A., 658.  
 amides and anilides of (BALBIANO), 1880, A., 461.  
 bromo- (ERLENMEYER and MÜLLER), 1882, A., 598.
- $\gamma$ -Hydroxybutyric acid, and its salts and lactone** (SAYTZEFF), 1880, A., 712; 1882, A., 497.
- $\alpha$ -Hydroxyisobutyric acid** (*acetic acid; dimethylglacial acid*) (MEYER), 1879, A., 139; (BALBIANO), 1879, A., 615; (KASCHIRSKY), 1882, A., 37.  
 etherification of (MENSCHUTKIN), 1882, A., 486.  
 action of, on carbamide (GRIMAU), 1877, ii., 741.  
 chloro-, preparation of (BISCHOFF), 1873, 159.  
*s*-dichloro- (GRIMAU and ADAM), 1880, A., 801.  
 $\alpha$ -di- and *tri*-chloro- (BISCHOFF), 1876, i., 557.

- Hydroxybutyronitrile**, chloro- (v. HOERMANN), 1879, A., 449.
- Hydroxycaffeine**, and its dibromide (FISCHER), 1881, A., 614.
- Hydroxycaproic acid**. See Hydroxyhexoic acid.
- Hydroxycarbamide**, salts of (HODGES), 1877, i., 69.
- Hydroxycarboxybenzeneazonaphthalene** (*naphthylazosalicylic acid*) and its decomposition (FRANKLAND), 1880, T., 747.
- $\beta$ -Hydroxy-*o*-carboxyphenylpropionic anhydride** (GABRIEL and MICHAEL), 1878, A., 230, 426.
- Hydroxycinchomeric acid** (WEIDEL and COBENZL), 1881, A., 744.
- 2'-Hydroxycinchonic acid** (2'-hydroxyquinoline-4'-carboxylic acid) (KOEIGS), 1879, A., 472.
- $\alpha$ -Hydroxycinchonic acid** (1-hydroxyquinoline-4'-carboxylic acid) and its salts (WEIDEL and COBENZL), 1881, A., 743.
- $\beta$ -Hydroxycinchonic acid** (3-hydroxyquinoline-4'-carboxylic acid) and its salts (WEIDEL), 1882, A., 226.
- Hydroxycitric acid** (PAWOLLECK), 1876, i., 375.
- Hydroxycomenamic acid**. See Trihydroxypicolinic acid.
- Hydroxycomenic acid** (REIBSTEIN), 1882, A., 197; (OST), 1882, A., 601.
- Hydroxy-3:1-cuminic acids**, 2- and 6- (*o*- and *p*-propylphenolcarboxylic acid) (SPICA), 1879, A., 631.
- 6-Hydroxy-3:1-cuminic acid** (*cumenolcarboxylic acid*) (PATERNÒ and MAZZARA), 1879, A., 642.
- 2-Hydroxy-4:1-cuminic acid**, and its salts (JACOBSEN), 1878, A., 731; 1879, A., 624.
- 3-Hydroxy-4:1-cuminic acid** (*thymohydroxycuminic acid*), and its salts (BARTH), 1878, A., 574; 1879, A., 158; (LIFFMANN and LANGE), 1881, A., 276.
- Hydroxydiethoxybenzene**. See Diethylpyrogallol.
- Hydroxydiethoxycaffeine** (FISCHER), 1881, A., 614.
- Hydroxydiethylacetic acid** ( $\alpha$ -hydroxyhexoic acid) (FREYTAG), 1880, A., 312; (TIEMANN and FRIEDLÄNDER), 1882, A., 56.
- $\beta$ -Hydroxy- $\alpha$ -diethylbutyric acid** (SCHNAPP), 1878, A., 293.
- Hydroxydihydroanthranol**, constitution of (LIEBERMANN), 1879, A., 261, and its oxidation (LIEBERMANN and TOPF), 1882, A., 856.
- 2'-Hydroxydihydroquinoline**. See Dihydrocarbostyryl.
- Hydroxydimethoxycaffeine** (FISCHER), 1881, A., 614.
- Hydroxydimethoxypropylbenzene** (*picaamar*) (v. HOFMANN), 1878, A., 417; 1880, A., 249.
- p*-Hydroxydiphenyl** (LATSCHINOFF), 1873, 749; (OSTEN), 1874, 581.
- o*-nitro-** (SCHULTZ and STRASSER), 1881, A., 605; (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 911.
- p*-nitro-** (SCHMIDT and SCHULTZ), 1881, A., 911.
- Hydroxydiphenyl oxide**, bromo- (*bromophenylphenol ether*) (BÖHMER), 1882, A., 398.
- m*-Hydroxydiphenylamine** (MERZ and WEITH), 1882, A., 179.
- Hydroxydiphenyleneacetic acid**. See Diphenyleneglycollic acid.
- Hydroxydiphenylphthalide** (*oxydiphenylphthalin*) (v. PECHMANN), 1881, A., 96.
- Hydroxyenoic acid**. See Hydroxynonoic acid.
- Hydroxyethanesulphonic acid**. See Isethionic acid.
- Hydroxyethenylamidophenyl mercaptan** (v. HOFMANN), 1880, A., 886.
- 2-Hydroxy-5-ethoxybenzaldehyde** (HANTZSCH), 1881, A., 166.
- Hydroxyethoxybenzene** (*ethylresorcinol*) (BENDER), 1881, A., 48.
- 4:6:2-dibromonitro-** and **4-nitro-** (WESELSKY and BENEDIKT), 1881, A., 727.
- 4:6-dinitro-** and **4-nitroso-** (ARONHEIM), 1879, A., 465.
- p*-Hydroxyethoxybenzene** (*p*-hydroxyphenetol; *ethylquinol*) (HANTZSCH), 1881, A., 166.
- action of nitric acid on (WESELSKY and BENEDIKT), 1881, A., 1139.
- $\alpha$ -Hydroxyethoxybenzophenone** (STAEDEL and GAIL), 1879, A., 325.
- 2-Hydroxy-5-ethoxybenzyl alcohol** (*ethoxysaligenin*) (HANTZSCH), 1881, A., 167.
- Hydroxyethoxy-mono- and -di-methylethylamines** (MORLEY), 1880, T., 232.
- Hydroxyethylamine hydrochloride**, mercury derivative of (KÖHLER), 1880, A., 159.
- Hydroxyethylaniline** (*oxetheniline*) (DEMOLE), 1874, 77.
- $\beta$ -Hydroxy- $\alpha$ -ethylbutyric acid** (WISLICIENUS, EHRLICH and ROHRBECK), 1876, i., 369; (WALDSCHMIDT), 1878, A., 136.

- Hydroxyethylcarbostyryl** (FRIEDLÄNDER and OSTERMAIER), 1882, A., 202.
- Hydroxyethylconiine** (*conylethylalkine*) (LADENBURG), 1882, A., 166.
- Hydroxyethyldiallylamine** (*diallyl-ethylalkamine*) (LADENBURG), 1881, A., 1158.
- Hydroxyethyldimethylamine** (*dimethyl-ethylalkine*) (LADENBURG), 1882, A., 166.
- Hydroxyethylenealdehydine** (*hydroxy-ethylene-2-methyl-5-ethylpyridine*), platinumchloride of (WURTZ), 1882, A., 1303.
- Hydroxyethylene- $\alpha$ -collidine** (*hydroxy-ethylene-3-methyl-2-ethylpyridine*), platinumchloride of (WURTZ), 1882, A., 1303.
- Hydroxyethylene-*o*-phenylamine** (WEDDIGE), 1881, A., 1138.
- Hydroxyethylenequinoline hydrochloride** (WURTZ), 1882, A., 1303.
- Hydroxyethylidenesuccinic acid.** See Methyltartronic acid.
- $\alpha$ -Hydroxyethylmalonic acid.** See Ethyltartronic acid.
- Hydroxyethylmethylacetic acid.** See  $\alpha$ -Hydroxyvaleric acid.
- Hydroxyethylpiperidine** (*piperethylalkine*) (LADENBURG), 1881, A., 1157.
- iodide (LADENBURG), 1882, A., 1194.
- Hydroxyethyltheobromine** (FISCHER), 1882, A., 629.
- Hydroxyethyl-*p*-toluidine** (DEMOLE), 1874, 903.
- Hydroxyfurfuraniline** (SCHIFF), 1880, A., 391.
- $\alpha$ -Hydroxyglutaric acid** (*glutanic acid*), and its isomerides (MARKOWNIKOFF), 1877, i., 63.
- occurrence of, in molasses (v. LIPPMANN), 1882, A., 1190.
- $\alpha$ -Hydroxyheptonic acid**, and its derivatives (HELMS), 1876, i., 374.
- identity of Helms' with Ley's acid (POPOFF and WASSILIEFF), 1877, ii., 882.
- $\beta$ -Hydroxyheptonic acid** ( *$\beta$ -diethylethylenelactic acid*) (SCHIROKOFF), 1880, A., 382.
- ( *$\alpha$ -methyl-ethyl- $\beta$ -hydroxybutyric acid*) (SAUR), 1878, A., 27.
- $\gamma$ -Hydroxyheptonic acid**, and its salts and lactone (FITTIG and KRAFFT), 1882, A., 42; (ANTHOR), 1882, A., 45.
- Hydroxyhexenoic acid** (*hydroxyhydrosorbic acid*) (FITTIG), 1880, A., 378.
- $\alpha$ -Hydroxyhexoic acid** (*hydroxyisobutylic acid*) (CONRAD and BISCHOFF), 1880, A., 629; (CONRAD), 1881, A., 577.
- (*hydroxydiethylacetic acid*) (FREYTAG), 1880, A., 312; (TIEMANN and FRIEDLÄNDER), 1882, A., 56.
- $\gamma$ -Hydroxyhexoic acid**, internal anhydride of (FITTIG), 1880, A., 378.
- $\gamma$ -Hydroxy-*n*-hexoic acid**, lactone of (FITTIG), 1880, A., 799; (FITTIG and HJELT), 1882, A., 33.
- $\gamma$ -Hydroxyisohexoic acid**, and some of its salts (FITTIG), 1880, A., 377; (FITTIG and BREDT), 1882, A., 34.
- lactone of (FITTIG and BREDT), 1880, A., 315; 1882, A., 34.
- Hydroxyhexoic acids**, lactones of (HJELT), 1882, A., 946.
- $\alpha$ -Hydroxyhexonitrile** (ERLENMEYER and SIGEL), 1875, 145.
- Hydroxyhydromuconic acid** (LIMPRICHT), 1873, 622.
- Hydroxyhydrosorbic acid.** See Hydroxyhexenoic acid.
- Hydroxylamine** (*oxyammonia*) (MEYER), 1875, 566.
- formation of (MEYER and LOCHER), 1875, 633; (ZORN), 1880, A., 4.
- preparation of (BERTONI), 1880, A., 297.
- structural formula of (LOSSEN), 1874, 254; 1875, 634; 1877, ii., 328.
- heat of formation of (BERTHELOT), 1877, i., 46.
- action of, on acetone (MEYER and JANNY), 1882, A., 1047.
- action of alkaline copper solution on (DONATH), 1877, ii., 406.
- reaction of, with thiocarbanilide (SCHIFF), 1877, i., 314.
- reducing action of (LOSSEN), 1875, 733.
- conversion of, into nitrous and nitric acids (BERTONI), 1880, A., 298.
- poisonous action of (RAIMONDI and BERTONI), 1882, A., 1222, 1231.
- derivatives (PHILLIPS), 1873, 284.
- vapour-density determinations of a few (GÜRKE), 1881, A., 571.
- amidated derivatives of (LOSSEN), 1874, 254; 1875, 634; 1876, i., 272; 1877, ii., 328.
- ethers of (EISELER), 1875, 766; (LOSSEN and ZANNI), 1877, i., 188.
- distillation of (PIESCHEL), 1875, 751.
- new double salts of (MEYERINGH), 1878, A., 113.



- Hydroxylamine** (*oxyammonia*), platino-cyanide (SCHOLZ), 1881, A., 707.  
estimation of (MEYERINGH), 1878, A., 335.
- Hydroxylation** by direct oxidation (MEYER), 1879, A., 139; (MEYER and BAUR), 1880, A., 165; 1881, A., 45; (MEYER and BONER), 1882, A., 195.
- p*-**Hydroxylophine**. See *p*-Hydroxy-triphenylglyoxaline.
- Hydro-xyloquinone**. See Xyloquinol.
- Hydroxylphthalamic acid**. See Phthalohydroxylamine.
- Hydroxymalonic acid**. See Tartronic acid.
- o*-**Hydroxymandelic acid** (*salicylglycollic acid*), and its anhydride (PLOCHL), 1882, A., 515.
- Hydroxymesitylene**. See Mesityl.
- o*-**Hydroxymesitylenic acid** and its salts (JACOBSEN), 1879, A., 530; 1881, A., 599.  
constitution of (JACOBSEN), 1879, A., 247, 530.
- p*-**Hydroxymesitylenic acid** (JACOBSEN), 1879, A., 643.
- Hydroxymethane-mono- and -disulphonic acids** (MÜLLER), 1874, 45.
- Hydroxymethenylamidophenyl mercaptan** (v. HOFMANN), 1879, A., 805.
- Hydroxymethoxyanthraquinone** (*methylalizarin*) (SCHUNCK), 1873, 900.
- 2-Hydroxy-3-methoxybenzaldehyde** (TIEMANN and KOPPE), 1882, A., 55.
- 2-Hydroxy-4-methoxybenzaldehyde** (TIEMANN and PARRISIUS), 1881, A., 271.
- 2-Hydroxy-5-methoxybenzaldehyde** (TIEMANN and MÜLLER), 1882, A., 52.
- 4-Hydroxy-2-methoxybenzaldehyde** (TIEMANN and PARRISIUS), 1881, A., 271.
- Hydroxymethoxybenzene**. See Guaiacol.
- Hydroxymethoxybenzene** (*methylresorcinol*) (HABERMANN), 1877, ii., 474; (TIEMANN and PARRISIUS), 1881, A., 270.  
*tribromo-* (TIEMANN and PARRISIUS), 1881, A., 270.  
*4-nitro-* (WESELSKY and BENEDIKT), 1881, A., 727.
- p*-**Hydroxymethoxybenzene** (*methylquinol*) (TIEMANN and MÜLLER), 1882, A., 52.  
*mono- and 2:5-dinitro-* (WESELSKY and BENEDIKT), 1881, A., 1139.
- 2-Hydroxy-4-methoxybenzoic acid** (*p-methoxysalicylic acid*) (TIEMANN and PARRISIUS), 1881, A., 271.
- 2-Hydroxy-5-methoxybenzoic acid** (*m-methoxysalicylic acid*) (TIEMANN and MÜLLER), 1882, A., 53.
- 3-Hydroxy-4-methoxybenzoic acid**. See *iso*Vanillic acid.
- 4-Hydroxy-2-methoxybenzoic acid** (TIEMANN and PARRISIUS), 1881, A., 271.
- 4-Hydroxy-3-methoxybenzoic acid**. See Vanillic acid.
- Hydroxymethoxycinnamic acid**. See Ferulic acid.
- Hydroxymethoxymethylbenzene**. See Methylresorcinol.
- Hydroxymethoxyphthalic acid**. See Normethylhemipinic acid.
- Hydroxymethoxytolualdehyde** (*m-homo-β-m-methoxysalicylaldehyde*) (TIEMANN and KOPPE), 1882, A., 55.
- 4-Hydroxy-3-methoxytoluic acid** and its derivatives (TIEMANN and NAGAI), 1877, ii., 339.
- Hydroxymethylanthraquinone** (DREWSEN), 1882, A., 1100.
- 3-Hydroxy-2-methylanthraquinone** and *4-bromo-* (FRAUDE), 1879, A., 635.
- β-Hydroxy-α-methylbutyric acid** (*hydroxyvaleric acid*) (WISLIGENUS, EHRLICH and ROHRBECK), 1876, i., 369; (ROHRBECK), 1878, A., 136.  
conversion of, into methylcrotonic acid (RÜCKER), 1878, A., 292.
- α-Hydroxy-β-methylglutaric acid** and its salts (FITTIG and BREDT), 1882, A., 34.
- β-Hydroxy-β-methylglutaric acid**, formation of, from methylallylcarbinol (SOROKIN), 1880, A., 383; 1881, A., 414.
- m*-**Hydroxymethyl-*p*-hydroxybenzoic acid** (*o-oxymethyloxydracrylic acid*) (REIMER), 1878, A., 881.
- Hydroxymethylsalicylic acids** (REIMER), 1878, A., 881.  
melting and boiling points of (TIEMANN), 1879, A., 924.
- Hydroxy-α-methylsuccinic acid**. See Citramalic acid.
- 2-Hydroxy-α-naphthaldehyde**, and its derivatives (KAUFFMANN), 1882, A., 1068.
- β-Hydroxynaphthaleneazonaphthalene-sulphonic acid**. See under Azo.
- Hydroxynaphthaquinone** (ELSBACH), 1882, A., 854.
- 2-Hydroxy-α-naphthaquinone** (*naphthalic acid*,  $C_{10}H_5(OH)O_2$ ) (DIEHL and MERZ), 1878, A., 888.
- 3-amido-* (DIEHL and MERZ), 1878, A., 888.
- 3-bromo-* (DIEHL and MERZ), 1878, A., 322, 736.

- 2-Hydroxy- $\alpha$ -naphthaquinone (*naphthalic acid*,  $C_{10}H_5(OH)O_2$ ), 3-nitro- (DIEHL and MERZ), 1878, A., 322, 888.
- 4'-Hydroxy- $\alpha$ -naphthaquinone (*juglone*; *nicin*) (REISCHAUER), 1878, A., 233.
- Hydroxynaphthaquinonesulphonic acid, and chloro- and bromo-, potassium salts of (ARMSTRONG and GRAHAM), 1881, T., 138.
- 2-Hydroxy- $\alpha$ -naphthoic acid, and its salts (KAUFFMANN), 1882, A., 1068. action of diazosulphobenzoic acid on (GRIESS), 1879, A., 317.
- Hydroxynaphthoic acids [m.p.  $212^{\circ}$ — $213^{\circ}$  and m.p.  $234^{\circ}$ — $237^{\circ}$ ] (BATTERSHALL), 1873, 1138; (STUMPF), 1878, A., 74. [m.p.  $245^{\circ}$ — $247^{\circ}$  and  $186^{\circ}$ — $187^{\circ}$ ] (STUMPF), 1878, A., 74.
- Hydroxynitromesitylene. See Mesitol, nitro-.
- $\beta$ -Hydroxynonoic acid ( *$\beta$ -dipropylglycolic acid*) (SCHIROKOFF), 1880, A., 382.
- Hydroxyoctoic acid. See Diallyloxalic acid.
- Hydroxyoctoic acid (*dipropylglycolic acid*) (WORONTSOFF), 1878, A., 29.
- Hydroxyoctoic acid, lactone of, *mono-* and *tri-bromo-* (HJELT), 1882, A., 946.
- $\alpha$ -Hydroxyoctoic acid and its amide and nitrile (ERLENMEYER and SIGEL), 1874, 981; 1875, 141, 1010.
- $\alpha$ -Hydroxyoctoic acid and its salts [m.p.  $107^{\circ}$ ] (BUTLEROFF), 1882, A., 936.
- Hydroxyoleic acid (MÜLLER-JACOBS), 1882, A., 1147.
- Hydroxy-organic acids (ERLENMEYER and MÜLLER), 1882, A., 598.
- p*-Hydroxyphenetol. See *p*-Hydroxyethoxybenzene.
- p*-Hydroxyphenol. See Quinol.
- Hydroxyphenyl benzyl ketone. See Benzoin.
- Hydroxyphenyl mercaptan, barium salt of (BIEDERMANN), 1876, i., 695.
- o*-Hydroxyphenylacetic acid, and its salts (WILL and LAUBENHEIMER), 1880, A., 266.
- p*-Hydroxyphenylacetic acid, and its salts (SALKOWSKI), 1880, A., 252; (BAUMANN), 1880, A., 255. in the animal body (BAUMANN), 1882, A., 514. in human urine (BAUMANN), 1880, A., 648; 1882, A., 514. preparation of, from urine (BAUMANN), 1880, A., 649.
- $\alpha$ -Hydroxyphenylacetic acid. See Mandelic acid.
- Hydroxyphenylacrylic acids, *o*-, *m*- and *p*-. See Coumaric acids.
- Hydroxyphenylanthranol (v. PECHMANN), 1881, A., 97.
- $\gamma$ -Hydroxyphenylbutyric acid (*benzylhydroxypropionic acid*) (BURCKER), 1882, A., 618; (v. PECHMANN), 1882, A., 1074.
- $\alpha$ -Hydroxy- $\beta$ -phenylisobutyric acid (*benzylmethylglycolic acid*), and the action of sulphuric acid on (GABRIEL and MICHAEL), 1879, A., 795.
- $\omega$ -Hydroxyphenyl-*as*-dimethylsuccinic acid, lactone of (FITTIG), 1882, A., 190.
- Hydroxyphenylethylacrylic anhydride. See Ethylcoumarin.
- Hydroxyphenylmethylacrylic anhydride. See Methylcoumarin.
- o*-Hydroxyphenyl- $\alpha$ -methylcrotonic acid (PERKIN), 1881, T., 431.
- Hydroxyphenylnaphthaquinone and its derivatives (BREUER and ZINCKE), 1879, A., 327; 1880, A., 665; 1882, A., 207.
- $\alpha$ -Hydroxy- $\alpha$ -phenylpropionic acid (*atrolactic acid*) (FITTIG and WURSTER), 1879, A., 379; (FITTIG and KAST), 1881, A., 427; (TIEMANN), 1882, A., 57. synthesis of, from acetophenone (SPIEGEL), 1882, A., 520. dibromo- (BÖTTINGER), 1881, A., 814.
- p*-Hydroxy- $\alpha$ -phenylpropionic acid (*phloretic acid*) (ERLENMEYER), 1880, A., 471. constitution and derivatives of (KÖRNER and CORBETTA), 1875, 458.
- o*-Hydroxy- $\beta$ -phenylpropionic acid. See Hydro-*o*-coumaric acid.
- p*-Hydroxy- $\beta$ -phenylpropionic acid. See Hydro-*p*-coumaric acid.
- Hydroxyphenylpropionic acids. See also Phenylactic acids.
- $\omega$ -Hydroxyphenylpyrotartaric acid, lactone of (FITTIG), 1882, A., 190.
- 1'-Hydroxy-3'-phenylisoquinoline (*imidodcoxybenzoinecarbonicanhydride*) (GABRIEL and MICHAEL), 1879, A., 246.
- Hydroxyphenylsulphuric acid (BAUMANN), 1879, A., 149.
- o*-Hydroxyphenylthiocarbamide (BENDIX), 1879, A., 314.
- Hydroxyphenylthiocarbimide. See Hydroxymethenylamidophenyl mercaptan.
- o*-Hydroxyphthalanilic acid (LADENBURG), 1877, i., 395.

- 4-Hydroxyphthalic acid (v. BAAYER), 1877, ii., 784; (MILLER), 1878, A., 982; (JACOBSEN), 1881, A., 599; 1882, A., 193.
- 2-Hydroxyisophthalic acid (MILLER), 1878, A., 983.
- 4-Hydroxyisophthalic acid, and its salts (OST), 1876, ii., 521; 1877, ii., 485; (JACOBSEN), 1878, A., 582, 583.  
new mode of formation of (ILES and REMSEN), 1878, A., 584.
- Hydroxyisophthalic acids, 2- and 4- (HASSE), 1878, A., 416; (TIEMANN and REIMER), 1878, A., 228; (SCHALL), 1879, A., 793.  
action of chloroform on (REIMER), 1878, A., 881.
- 5-Hydroxyisophthalic acid, and its salts (HEINE), 1880, A., 519; (LÖNNIES), 1881, A., 50; (BEYER), 1882, A., 1297.
- Hydroxyphthalic acids, melting and boiling points of (TIEMANN), 1879, A., 924.  
oxidation of hydroxytoluic acids to (SCHALL), 1879, A., 791.  
table of properties of (HEINE), 1880, A., 550.
- 4-Hydroxyphthalic anhydride (v. BAAYER), 1877, ii., 785.
- "Hydroxypicoline" (ETARD), 1881, A., 1046.
- Hydroxypiperhydronic acid, *tetrabromo-* (FITTIG and MIELCK), 1874, 899.
- Hydroxypiperide, *mono-* and *di-bromo-* (FITTIG and MIELCK), 1874, 898.
- Hydroxypropanesulphonic acids (MÜLLER), 1874, 360.
- $\alpha$ -Hydroxypropionic acid. See Lactic acid.
- $\beta$ -Hydroxypropionic acid. See Hydroacrylic acid.
- Hydroxy-*p-isopropylbenzoic* acid and its salts (MEYER), 1878, A., 879; 1879, A., 139, 795; (MEYER and ROSICKI), 1879, A., 157, 465; (MEYER and MÜLLER), 1882, A., 840.
- Hydroxypropyldiethylamine (*diethylpropylalkine*) (LADENBURG), 1882, A., 165.  
action of methylic iodide on (LADENBURG), 1882, A., 1194.
- Hydroxypropyldimethylamine (*dimethylpropylalkine*) (LADENBURG), 1882, A., 165.  
and its methyl-hydroxide and -chloride (MORLEY), 1880, A., 877; 1881, A., 151.
- Hydroxypropylmalonic acid, its salts and lactone (HJELT), 1882, A., 948.
- Hydroxypropylpiperidine (*piperpropylalkine*) (LADENBURG), 1881, A., 1158; 1882, A., 165.  
iodide (LADENBURG), 1882, A., 1194.
- Hydroxyisopropylsulphobenzoic acid and its salts (MEYER and BAUR), 1881, A., 46; (MEYER and BONER), 1882, A., 195.
- Hydroxypropyl-*p-toluidine* and its derivatives (MORLEY), 1882, T., 387; A., 723.
- Hydroxypropyltrimethylammonium hydroxide and chloride (MORLEY), 1880, A., 877; 1881, A., 151; 1882, T., 389.
- Hydroxypyrotartaric acid (*itamalic acid*), constitution of (MORRIS), 1880, T., 14.  
from ethylic acetoacetate (DEMARÇAY), 1876, ii., 403.  
chloro- (MORAWSKI), 1873, 1221; 1875, 1254.
- $\beta$ -Hydroxypyrotartaric acid. See Citramalic acid.
- Hydroxypyrotartaric acids (MARKOWNIKOFF), 1877, i., 63.
- 2'-Hydroxyquinoline. See Carbstyryl.
- 4'-Hydroxyquinoline (*kynurine*) and its derivatives (KRETSCHY), 1881, A., 828.
- 1-Hydroxyquinoline ( $\alpha$ -quinophenol) (BEDALL and FISCHER), 1881, A., 613; 1882, A., 869; (WEIDEL and COBENZL), 1881, A., 743.
- 3-Hydroxyquinoline ( $\beta$ -quinophenol) and its salts (SKRAUP), 1882, A., 223; (WEIDEL), 1882, A., 227.
- Hydroxyquinolines, 1-, 2-, and 3- (SKRAUP), 1882, A., 1111.  
preparation of (SKRAUP), 1882, A., 441.
- 1-Hydroxyquinoline-4'-carboxylic acid ( $\alpha$ -hydroxycinchoninic acid) and its salts (WEIDEL and COBENZL), 1881, A., 743.
- 3-Hydroxyquinoline-1'-carboxylic acid ( $\beta$ -hydroxycinchoninic acid) and its salts (WEIDEL), 1882, A., 226.  
See also Xanthoquinic acid.
- 2'-Hydroxyquinoline-4'-carboxylic acid (2'-hydroxycinchoninic acid) (KOENIGS), 1879, A., 472.
- 5-Hydroxysalicylic acid. See 2:5-Dihydroxybenzoic acid.
- Hydroxysalicylsulphonic acid. See 2:5-Dihydroxysulphobenzoic acid.
- o*-Hydroxystilbene (MICHAEL), 1881, A., 1150.
- Hydroxysuberanic acid (*hydroxysubericarboxylic acid*) (DALE and SCHORLEMMER), 1881, T., 540.

**Hydroxysuberlic acid** (HELL and MÜLLER-HÄUSER), 1880, A., 543.

**Hydroxysulphobenzeneazobenzoic acid** (*m-azobenzene-o-sulphonic acid*) and its salts (GRIESS), 1882, A., 48.

**Hydroxyterephthalic acid** (BURKHARDT), 1877, ii., 336; 1878, A., 73; (BÖTTINGER), 1878, A., 33; (BARTH), 1878, A., 574; (FISCHL), 1879, A., 639; (SCHALL), 1879, A., 793.

decomposition of (BURKHARDT), 1877, ii., 337.

dinitro- (BURKHARDT), 1878, A., 73.

**Hydroxytetramethylhexahydropyridine.** See Triacetonal-kamine.

**Hydroxytetric acid.** See Methylsuccinic acid.

"**Hydroxytetrolic acid**" (DEMARÇAY), 1880, A., 625; 1881, A., 256; (DUTSBERG), 1882, A., 1193.

**6-Hydroxythymoquinone** (CARSTANJEN), 1877, ii., 614; (ZINCKE), 1881, A., 595.

constitution of (LIEBERMANN), 1877, i., 463; ii., 476, 891.

chloro- (LADENBURG and ENGELBRECHT), 1878, A., 60.

**o-Hydroxy-m-tolualdehyde** (*p-homosalicylaldehyde*) and its derivatives (TIEMANN and SCHOTTEN), 1878, A., 875; (SCHOTTEN), 1878, A., 877.

**p-Hydroxy-m-tolualdehyde** (*o-homosalicylaldehyde*) (TIEMANN and SCHOTTEN), 1878, A., 876.

**Hydroxy-m-tolualdehydes** (BARRIER), 1880, A., 468.

**Hydroxytolualdehydes** from the three isomeric cresols (TIEMANN and SCHOTTEN), 1878, A., 875.

melting and boiling points of (TIEMANN), 1879, A., 924.

**4-Hydroxy-o-toluic acid** (*p-homo-m-hydroxybenzoic acid*) (JACOBSEN), 1881, A., 599.

**5-Hydroxy-o-toluic acid** (*m-homo-m-hydroxybenzoic acid*) (TIEMANN and SCHOTTEN), 1878, A., 877; (SCHALL), 1879, A., 791; (JACOBSEN), 1881, A., 599.

**ω-Hydroxy-o-toluic acid** (*oxymethylbenzoic acid*) (HESSERT), 1878, A., 66, 419.

**2-Hydroxy-m-toluic acid** (*β-cresotic acid*; *o-homosalicylic acid*) (V. GERICHTEN), 1878, A., 49; (SCHALL), 1879, A., 791.

**4-Hydroxy-m-toluic acid** (*α-cresotic acid*; *p-homosalicylic acid*) (JACOBSEN), 1878, A., 582; 1879, A., 530; (TIEMANN and SCHOTTEN), 1878, A., 875; (SCHALL), 1879, A., 791.

**5-Hydroxy-β-toluic acid** and its salts (JACOBSEN), 1882, A., 193.

**6-Hydroxy-m-toluic acid** (*o-homo-p-orybenzoic acid*) and its derivatives (TIEMANN and SCHOTTEN), 1878, A., 877; (SCHALL), 1879, A., 791; (JACOBSEN), 1881, A., 599; (REMSEN and KUHARA), 1882, A., 607; (MAHON), 1882, A., 1203.

**2-Hydroxy-p-toluic acid** and its salts (FITTICA), 1874, 1166; (V. GERICHTEN and RÖSSLER), 1878, A., 672; 1879, A., 323; (HALL and REMSEN), 1880, A., 257; 1882, A., 186.

**3-Hydroxy-p-toluic acid** (*γ-cresotic acid*; *m-homosalicylic acid*) (BIEDERMANN and PIKE), 1873, 904; (TIEMANN and SCHOTTEN), 1878, A., 875; (SCHALL), 1879, A., 791.

**Hydroxytoluic acids** (*α*-, *β*-, and *γ-cresotic acids*) (HLE), 1877, i., 708; (TIEMANN and SCHOTTEN), 1878, A., 876.

(*homosalicylic acids*) (TIEMANN and SCHOTTEN), 1878, A., 876; (JACOBSEN), 1879, A., 530; (SCHALL), 1879, A., 791.

melting and boiling points of (TIEMANN), 1879, A., 924.

oxidation of, to hydroxyphthalic acids (SCHALL), 1879, A., 791.

**Hydroxytoluoyltropeine.** See Homatropine under Alkaloids.

**α-Hydroxy-α-tolylpropionic acid** (*methyltoluolactic acid*) and *di-β-bromo-* (BÖTTINGER), 1881, A., 1036.

**Hydroxytriethylamine** (LADENBURG), 1881, A., 1158.

**Hydroxytrimelic acid** and its salts (OST), 1876, ii., 521; 1877, ii., 485; 1878, A., 796; (TIEMANN and REIMER), 1878, A., 228; (REIMER), 1878, A., 882; (JACOBSEN), 1879, A., 531; 1881, A., 432.

**p-Hydroxytriphenylglyoxaline** (*hydroxylophin*) and its acetyl-derivative (JAPP and ROBINSON), 1882, T., 327.

**Hydroxytriphenylmethanecarboxylic acid** (V. PECHMANN), 1881, A., 96.

**Hydroxytrisulphobenzoic acid** and its salts (KRETSCHY), 1878, A., 731.

**Hydroxytropine.** See Oscine under Alkaloids.

**m-Hydroxyuvitic acid** (OPPENHEIM and PFAFF), 1874, 1161; 1875, 1261.

formation of (OPPENHEIM and PRECHT), 1876, ii., 69.

action of nitric acid on (EMMERLING and OPPENHEIM), 1876, ii., 523.

**op-Hydroxyuvitic acid**, and its salts (JACOBSEN), 1881, A., 431.



- op*-Hydroxyuvitic acid. preparation of (BÖTTINGER), 1881, A., 172.
- 4-Hydroxyuvitic acid (JACOBSEN), 1879, A., 531.
- Hydroxyuvitic acids, comparison of properties of (JACOBSEN), 1881, A., 172.
- $\alpha$ -Hydroxyvaleramide (*trichlorovalerolactamide*) (PINNER and KLEIN), 1879, A., 41.
- $\alpha$ -Hydroxyisovaleramide (LIPP), 1881, A., 86.
- Hydroxyvaleric acid (V. MILLER), 1879, A., 45.  
fermentation of (GIACOSA), 1879, A., 782.
- Hydroxyvaleric acid ( $\beta$ -hydroxy- $\alpha$ -methylbutyric acid) (WISLICIENUS, EHRLICH and ROHRBECK), 1876, i., 369; (ROHRBECK), 1878, A., 136.  
conversion of, into methyleterotonic acid (RÜCKER), 1878, A., 292.
- $\alpha$ -Hydroxyvaleric acid (*methylethyl-hydroxyacetic acid*) (V. MILLER), 1880, A., 34, 315; (BÜCKING), 1880, A., 872.  
*trichloro-* (*trichlorovalerolact acid*) and chlorodibromo- (PINNER and KLEIN), 1879, A., 42.
- $\gamma$ -Hydroxyvaleric acid, salts of (FITTIG and MESSERSCHMIDT), 1882, A., 35; (FITTIG and WOLFF), 1882, A., 36.
- $\alpha$ -Hydroxyisovaleric acid (*hydroxyisobutylic acid*) (SCHMIDT and SACHTLEBEN), 1879, A., 140; (LIPP), 1881, A., 86.
- $\beta$ -Hydroxyisovaleric acid from dimethylallylcarbinol (SEMLJANITZIN and SAYTZEFF), 1879, A., 618; (V. MILLER), 1880, A., 35.  
conversion of, into isopropylacetic acid (SCHIROKOFF), 1881, A., 414.
- $\alpha$ -thio- (DUVILLIER), 1878, A., 489.
- Hydroxyvaleric acids (V. MILLER), 1880, A., 314.
- $\gamma$ -Hydroxyvaleric anhydride. See Valerolactone.
- $\alpha$ -Hydroxyisovaleric anhydride. See Valerolactide.
- Hydroxyvaleronitrile, *trichloro-* (*butyl-chloral hydrocyanide*) (PINNER and BISCHOFF), 1876, i., 554; (PINNER and KLEIN), 1879, A., 41.
- $\alpha$ -Hydroxyisovaleronitrile (LIPP), 1880, A., 621; 1881, A., 85.
- Hydroxy-*m*-xyloquinone and its derivatives (FITTIG), 1874, 263; 1875, 637; (FITTIG and SIEPERMANN), 1876, i., 918; (KNECHT), 1882, A., 1200.
- Hydroxyxylylic acid (REUTER), 1878, A., 413; (JACOBSEN), 1879, A., 641.
- Hydrurilic acid (MURDOCK and DOEBNER), 1876, ii., 510.
- Hygraphilite, a new mineral of the pinite group (LASTEYRES), 1873, 1207.
- Hygrine (KENNEDY), 1880, A., 169.
- Hyosceine and its derivatives (LADENBURG), 1880, A., 674; 1881, A., 56, 446; 1882, A., 229.
- Hyoscinic acid. See Tropic acid.
- Hyoscyamine. See under Alkaloids.
- Hyoscyamus niger*, chemico-legal examination of (WASILEWSKY), 1877, ii., 934.
- Hypargyrite. See Miargyrite.
- Hypersthene (*szaboite*) (KOCH), 1879, A., 441; (V. LASAULX), 1881, A., 236; (VOM RATH), 1881, A., 549.  
new locality of (GONNARD), 1881, A., 378.  
of the hyperite of Aveyron (PISANI), 1878, A., 946.  
from Bodenmais (BECKE), 1881, A., 539.  
from Mont Dore (DES CLOIZEAUX), 1874, 1074; (VOM RATH), 1875, 551.  
from the pumice of Santorin (FOUQUÉ), 1881, A., 388.
- Hypersthene-andesite, so-called, from St. Egidi in Lower Styria (HUSSAK), 1881, A., 695.
- Hypocaffeine, and its salts (FISCHER), 1881, A., 614; 1882, A., 217.
- Hypochloric and hypochlorous acids and hypochlorites. See under Chlorine.
- Hypochlorin and its origin (PRINGSHEIM), 1880, A., 560, 671.
- Hypochlorite (*bismutoferrite*) (FRENZEL), 1873, 478.
- Hyponitric and hyponitrous acids and hyponitrites. See under Nitrogen.
- Hypophosphorous and hypophosphoric acids and hypophosphites. See under Phosphorus.
- Hypoquebrachine (HESSE), 1882, A., 743.
- Hyposulphurous acid. See under Sulphur.
- Hypovanadic oxide. See under Vanadium.
- Hypoxanthine. See Sarcine under Alkaloids.
- Hyraceum (GREENE and PARKER), 1880, A., 172.

## I.

- Ibotin (MARTIN), 1879, A., 330.
- Icacin (HESSE), 1879, A., 73.

- Ice**, optical structure of (BERTIN), 1878, A., 632.  
 and other bodies, existence of, in the solid state, at temperatures far above their ordinary melting points (CARNELLEY), 1881, A., 966.  
 alleged heating of, under low pressures (WÜLLNER), 1881, A., 778; (BUTLEROFF), 1882, A., 355.  
 flexibility of (BIAUCONT), 1876, ii., 271.  
 analysis of (RÜDIGER), 1881, A., 207.  
 See also Steam and Water.
- Ice-machines**, use of sulphurous acid in (PICTET), 1878, A., 251.
- Icosinene** (*cikosylene*) from brown-coal paraffin (LIPPMANN and HAWLICZEK), 1879, A., 447, 699.  
 chlorination of (LIPPMANN and HAWLICZEK), 1879, A., 699.
- Ictrogen** (KÜHN), 1881, A., 931.
- Idocrase** (*vesuvian*, *vesuvianite*) (ROSTER), 1878, A., 282.  
 constitution of (RAMMELSBURG), 1873, 1107.  
 from Orawicza (JANOVSKY), 1874, 237, 346.  
 in the limestone-strata of Deutsch-Tschammendorf (SCHUMACHER), 1879, A., 902.  
 near Drammen (BRÖGGER), 1877, ii., 119.  
 from Gleinitz and the Johnsberg, near Jordansmühl (v. LASAULX), 1881, A., 381.  
 garnet and datolite, association of (SMITH), 1875, 136.
- Idrialin** and its bromo-derivatives and oxidation products (GOLDSCHMIEDT), 1879, A., 167.
- Idryl**. See Fluoranthene.
- Igasuric acid** (LUDWIG), 1873, 904.
- Igasurine** (SHENSTONE), 1880, T., 235; 1881, T., 457.
- Ihleite**, a new mineral (SCHRAUF), 1877, i., 581; ii., 859.
- Ilex paraguayensis*. See Paraguay tea.
- Illicium religiosum* (*star anise*), fruit and seeds of (EIJKMAN), 1881, A., 918.
- Ilmenite** (*titanic iron ore*) (PETERSEN), 1873, 735; (BLOMSTRAND), 1880, A., 15.  
 of abnormal composition (HILGER), 1874, 131.  
 magnetisation of (PHIPSON), 1876, i., 349.  
 working of (WIMMER), 1873, 540.  
 action of titanium dichloride, chlorine, and hydrochloric acid on (FRIEDEL and GUÉRIN), 1877, i., 173.
- Ilmenite** (*titanic iron ore*) in dolerite (v. SANDBERGER), 1874, 558.  
 from the Kapruner-Thörl in the Pinzgau (v. ZEPHAROVICH), 1881, A., 996.
- Ilvaite** (*lievrite*) (SIPÖCZ), 1876, i., 193.  
 composition of, as determined by Early's method (REYNOLDS), 1877, ii., 716.  
 humite and chondrodite, isomorphism and chemical constitution of (WEB-SKY), 1877, ii., 117.
- Imides**, conversion of nitriles into (PINNER and KLEIN), 1878, A., 141, 491, 864; 1879, A., 46.
- Imidoisobutyricisovaleric acid** (*imido-dimethylacetodimethylpropionic acid*) (HEINTZ), 1880, A., 102.
- Imidochlorides**, acid, and amidines (WALLACH and GOSSMANN), 1878, A., 669.  
 action of alcohols and phenols on (WALLACH and LIEBERMANN), 1880, A., 557.
- Imidodeoxybenzoincarbonic anhydride**. See 1'-Hydroxy-3'-phenylisoquinoline.
- Imidodiethylene-*o*-nitrophenyl ether**. See Diphenoxydiethylamine, *dinitro*.
- di***Imidodihydrindindicarboxylic acid** (v. SOMMARUGA), 1878, A., 799; 1879, A., 63.
- Imidodimalonamide** (CONRAD and GUTH-ZEIT), 1882, A., 947.
- Imidodimethylacetodimethylpropionic acid**. See Imidoisobutyricisovaleric acid.
- Imidodioctyl-imide and -nitrile** (ERLENMEYER and SIGEL), 1875, 1018.
- Imidodiphenyl**. See Carbazole.
- $\alpha$* -**Imidodipropionic acid** (*diethylidenelactamic acid*) (HEINTZ), 1873, 269; 1880, A., 801; (ERLENMEYER and PASSAVANT), 1880, A., 313.
- $\alpha$* -**Imidodipropionitrile** (ERLENMEYER and PASSAVANT), 1880, A., 313.
- Imidohydroxyanthraquinone** (BÖTTGER and PETERSEN), 1873, 290.
- di***Imido- $\alpha$ -naphthol**. See Naphthaquinoneimide, amido-.
- di***Imido- $\alpha$ -naphthol-2'-sulphonic acid** (LAUTERBACH), 1882, A., 64.
- Imido-octic acid**, preparation, properties and salts of (ERLENMEYER and SIGEL), 1875, 1017.
- di***Imidophenolphthalein** (v. BAEYER and BURKHARDT), 1878, A., 866; 1880, A., 657.
- Imidosulphonic acid** (BERGLUND), 1876, ii., 44.
- Imidothio-ethers** (PINNER and KLEIN), 1879, A., 147.

- Imidoisovaleronitrile**, and its hydrochloride (LIPP), 1881, A., 85.
- Imperatorin**. See Peucedanin.
- Inactose**, preparation of (MAUMENÉ), 1882, A., 490.
- Incandescent bodies**, optical properties of (HIRN), 1874, 526.  
action of, on the transmission of electricity (DOULIOR), 1874, 333.
- Incandescent lamps**, use of, for photographic purposes (BOLAS), 1882, A., 1240.
- Incas pin**, found on a mummy at Arica, Peru, composition of (FLIGHT), 1882, T., 145.
- Incineration** (LOEWE), 1881, A., 939.
- Indiarubber**. See Caoutchouc.
- Indican** and  $\psi$ -**indican**. See under Glucosides.
- Indicator**, new, for use in acidimetry (BORSTRÄGER), 1879, A., 396.  
alizarin as an (SCHAAL), 1874, 191.  
ammonium thiocyanate, as an (VOLHARD), 1878, A., 743.  
dimethylaniline-orange and phenacetolin as (LUNGE), 1882, A., 774.  
"flavescin" as an (LUX), 1881, A., 193.  
fluorescein as an (KRÜGER), 1877, i., 341.  
helianthin as an (WILLIAMS), 1879, A., 553.  
hæmatoxylin, as an, in acidimetry (MASCHKE), 1876, i., 740.  
logwood as an (STOLBA), 1876, i., 434.  
phenolphthalein as an (LUCK), 1877, ii., 640; (VIELHAER), 1879, A., 273; (WARDER), 1881, A., 848.  
potassium dichromate as an (RICHTER), 1882, A., 1233.  
potassium permanganate as an (PARNELL), 1875, 27; (ZIMMERMANN), 1881, A., 759; (KESSLER), 1881, A., 843.  
tannic acid as an (BACHMEYER), 1881, A., 946.  
tropolins as (V. MÜLLER), 1878, A., 527; (LUNGE), 1879, A., 176.  
See also Analysis, volumetric.
- Indifulvin** (SCHUNCK), 1879, A., 533.
- Indigo**, extraction of (SMITH), 1874, 1119.  
reduction of, by glycerol (PRUD'HOMME), 1879, A., 188.  
reduction of, by jute (CROSS and BEVAN), 1882, T., 108.  
reduction of, by sodium hyposulphite (SCHÜTZENBERGER and DE LANDE), 1874, 831.
- Indigo**, solvents for (JACOBSEN), 1873, 179.  
economy of, in printing blues (ANON.), 1873, 421.  
and other vegetable dyes, decolorisation of, by various sulphur-compounds (SCHÄR), 1876, ii., 103.  
*diamido-*, *dibrom-*, and *dinitr-* (V. BAEYER), 1879, A., 938.  
"Indigo, Aachen" (REIMANN), 1876, i., 988.
- Indigo-blue**. See Indigotin.
- "**Indigo-carmine**" (NENCKI), 1875, 479.  
preparation of liquid (V. JOCLÉT), 1878, A., 625.
- Indigo femelle*, examination of (SACC), 1882, A., 989.
- Indigofera tinctoria*, indigo-blue from (SCHUNCK), 1879, A., 534.
- Indigo-group**, compounds of the (V. BAEYER), 1882, A., 198, 619, 1100.  
relation of cinnamic acid to the (V. BAEYER), 1881, A., 274.
- Indigo-red** (*indigo-purpurin*; *indirubin*) (V. BAEYER), 1879, A., 535; (SCHUNCK), 1879, T., 528; 1879, A., 533.  
brom-, and *dinitr-* (V. BAEYER), 1879, A., 938.
- Indigotin** (*indigo-blue*) (SCHUNCK), 1879, A., 532; (V. BAEYER), 1879, A., 535; (ANON.), 1882, A., 442, 1100.  
in animals, or the purple of the ancients (A. and G. DE NEGRI), 1876, ii., 533.  
from *Polygonum tinctorium* and other plants (SCHUNCK), 1878, A., 885; 1879, A., 532.  
phenol as a probable source of (PHIPSON), 1874, 692.  
constitution of (BAUMANN and TIEMANN), 1879, A., 806, 935.  
synthesis of (WICHELHAUS), 1876, ii., 532; (EMMERLING and ENGLER), 1877, i., 321; (V. BAEYER), 1878, A., 884; (ROSENSTIEHL), 1881, A., 98.  
vapour-density of (V. SOMMARUGA), 1879, A., 63.  
molecular weight of (V. SOMMARUGA), 1879, A., 532.  
action of sodium thiosulphate on (GIRAUD), 1879, A., 936.  
substitution products (V. BAEYER), 1879, A., 938.  
preparation of scatole from (V. BAEYER), 1881, A., 278.  
yellow colouring matter from (GIRAUD), 1879, A., 936.

- Indigotin** (*indigo-blue*), fixation of alumina as a discharge on, by means of aluminium chloride (SAGET), 1882, A., 676.  
 derivatives of (SCHÜTZENBERGER), 1877, ii., 898; (GIRAUD), 1879, A., 936.  
 testing of (LÖWENTHAL), 1873, 96.  
 detection of, in wine (GAUTIER), 1877, ii., 937.  
 estimation of (BERNTSEN and DREWS), 1881, A., 310.  
 use of sodium hyposulphite ( $\text{Na}_2\text{SO}_3$ ) in the estimation of (BERNTSEN), 1881, A., 310.
- Indigotin-group** (v. BAEYER), 1879, A., 937.
- Indigo-white** (*leucindigo*), action of potassium pyrosulphate on (v. BAEYER), 1880, A., 46.
- Indigo-white-sulphuric acid** (*leucindigo-sulphuric acid*), and its potassium salt (BAUMANN and TIEMANN), 1880, A., 475.
- Indirubin**. See Indigo-red.
- Indium** in American blendes (CORNWALL), 1874, 34.  
 calamine rich in (A. and G. DE NEGRI), 1878, A., 708.  
 from smithsonite from South-Western Virginia and East Tennessee (TANNER), 1874, 1144.  
 electrical properties of (ERHARD), 1882, A., 262.  
 action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 84.  
 new compounds of (ROESSLER), 1873, 846.
- Indium chloride**, vapour-density of (C. and V. MEYER), 1879, A., 579.  
 potassium and sodium sulphide (SCHNEIDER), 1874, 871.
- Indoin** (v. BAEYER), 1882, A., 198, 620.
- Indole** (*ectole*) (NENCKI), 1875, 1039, 1205; 1876, i., 944.  
 formation of, from albumin (KÜHNE), 1875, 773; (NENCKI), 1875, 1039.  
 formation of, and fermentation of the liver (KOUKOL-YASNOPOLSKY), 1876, ii., 211.  
 formation of, in the intestines of Herbivora (TAPPEINER), 1882, A., 240.  
 preparation and properties of (ENGLER and JANECKE), 1877, i., 321.  
 synthesis of (v. BAEYER and CARO), 1877, ii., 898.  
 vapour-density of (NENCKI), 1876, i., 600.  
 dichlor- (*chloroxindole chloride*) (v. BAEYER), 1879, A., 535.
- $\psi$ -Indole** (NENCKI), 1878, A., 680.
- isoIndole**. See 2:5-Diphenylpyrazine.
- Indoline**, and its derivatives (GIRAUD), 1881, A., 51.
- Indophenin**, and brom- (v. BAEYER), 1879, A., 937.
- Indophenols** (KOECHLIN and WITT), 1882, A., 675.
- Indoxyl** (BAUMANN and TIEMANN), 1879, A., 806, 935; (v. BAEYER), 1882, A., 198.  
 nitrosamine (v. BAEYER), 1882, A., 1102.
- Indoxyl-compounds** (v. BAEYER), 1882, A., 198.
- Indoxylic acid** (v. BAEYER), 1882, A., 198.
- Indoxylsulphuric acid** ("*indican*") (BAUMANN and TIEMANN), 1879, A., 806; 1880, A., 475.  
 from urine (v. BAEYER), 1880, A., 46.  
 origin of, in the urine (JAFFÉ), 1873, 516.  
 source of, in the urine of Carnivora (SALKOWSKI), 1876, i., 950.  
 excretion of (JAFFÉ), 1878, A., 442.  
 detection of, in urine (WEBER), 1879, A., 343.  
 potassium salt of (BAUMANN and TIEMANN), 1880, A., 475; (v. BAEYER), 1882, A., 199.
- Induction spark**. See under Electrochemistry.
- Induline** (WITT), 1879, T., 188.  
 manufacture of (WOLFF), 1880, A., 77.
- Inks** from logwood (VIEDT), 1876, i., 821; 1877, i., 123.  
 composition of (THOMSON), 1881, A., 67.  
 prevention of mould in (HIRSCHBERG), 1873, 100.  
 black writing (VIEDT), 1876, i., 821; 1877, i., 123.  
 copying, for transcribing letters without a press (ATTFIELD), 1882, A., 128.  
 indelible, for printing cotton and linen fabrics intended for chlorine bleaching (ANON.), 1876, ii., 236.  
 indulin- (ANON.), 1873, 959.  
 red, which resists the action of most chemicals (ANON.), 1874, 99.  
 for photolithography and phototypography (TOOVEY), 1882, A., 114.
- Inorganic acids**. See Acids.  
 compounds. See Compounds.  
 salts. See Salts.
- Inosite**. See under Carbohydrates.
- Insect powder**, active principle of (DAL SIE), 1879, A., 807.



- Insect powder**, Persian, active principle in (ROTHER), 1878, A., 801.
- Instruments**, construction of scientific, of rock crystal (STEIN), 1877, i., 682.
- Insulators**, experimental determination of the dielectric constants of (KESSLER), 1875, 38.
- Intestinal canal**, absorption of gum and mucilage in the (ANON.), 1875, 95.  
human, absorption of various alimentary materials in (RUBNER), 1880, A., 563.
- Intestinal concretion** containing lithium (DELACHANAL and MERMET), 1875, 96.
- Intestinal digestion** (DUCLAUX), 1882, A., 1119.
- Intestine**, small, hydrolytic ferments of the (BROWN and HERON), 1880, A., 903; 1881, A., 114.
- Intestines** of Herbivora, formation of phenol, indole, and scatole in (TAPPEINER), 1882, A., 240.
- Inula-camphor** (KALLEN), 1874, 352; 1876, i., 917.
- Inulic acid**. See Alantic acid.
- Inulic anhydride**. See Helenin.
- Inulin**. See under Carbohydrates.
- Inulol**. See Alantol.
- Invertase** (*invertin*) (BARTH), 1878, A., 590; (DONATH), 1878, A., 802.  
influence of, on the fermentation of cane-sugar (ANON.), 1882, A., 1277.  
temperature at which it is destroyed (MAYER and HAGEMANN), 1882, A., 378.
- Invert-sugar**. See under Carbohydrates.
- p-Iodacetanilide** (MICHAEL and NORTON), 1878, A., 406.
- s-diIodacetone** (VÖLKER), 1878, A., 780.
- Iodallylic alcohol** (HÜBNER and LELLMANN), 1880, A., 538; 1881, A., 242.
- m-Iod-2-amidobenzoic acid**, and its salts (GROTHE), 1879, A., 377.
- Iodammonium iodide** (SEAMON), 1882, A., 8.
- Iodaniline**. See Aniline, iod-.
- Iodarsenic acid**, behaviour of compounds of, with basic oxides and alkaline iodides (ZINNO), 1874, 130.
- Iodarsenobenzene** (MICHAELIS and SCHULTE), 1881, A., 722.
- Iodates**. See Iodic acid under Iodine.
- Iodethane**. See Ethylic iodide.
- diIodethane** (*ethylidene diiodide*) (GUSTAVSON), 1874, 1075, 1153.  
- (*ethylenic diiodide*) (ARONSTEIN and KRAMPS), 1880, A., 541.
- diIodethylene** (*acetylenic diiodide*) (PLIMPTON), 1882, T., 391.
- Iodethylenepicric acid** (ANDREWS), 1880, A., 619.
- Iodethylenic dibromide** (SIMPSON), 1874, 564.
- Iodic acid and iodides**. See under Iodine.
- Iodine** in apatite (KUHLMANN), 1873, 357.  
mineral springs of Java containing (REICHARDT), 1873, 741.  
a neglected source of (*freshwater algae*) (ZENGER), 1876, i., 876.  
extraction of, from mineral phosphates (THIERCELIN), 1875, 733.  
apparatus for recovering the disengaged, in the manufacture of superphosphate of lime (THIBAUT), 1875, 106.  
manufacture of, from kelp (STANFORD), 1878, A., 169; (GALLOWAY), 1878, A., 1017; (THIERCELIN), 1881, A., 318; (ALLARY and PELLIEUX), 1881, A., 207, 319; (ALLARY), 1881, A., 319.
- industry**, recent improvements in (WETZIG), 1880, A., 195.  
in France (DEITE), 1879, A., 283.  
absorption spectra of (VOGEL), 1879, A., 190.  
electric conductivity of (EXNER), 1882, A., 679.  
specific volume of (THORPE), 1880, T., 385.  
specific heat of (STRECKER), 1881, A., 784.  
vapour density of (CRAFTS), 1880, A., 432, 788; (MEYER), 1880, A., 433, 696, 788; (CRAFTS and MEIER), 1880, A., 433, 606; 1881, A., 221; (TROOST), 1880, A., 695; (BERTHELOT), 1880, A., 846.
- dissociation** of the vapour of (NAUMANN), 1880, A., 695.
- polymeric transformation** of the vapour of (LEMOINE), 1881, A., 1096.
- affinity** of hydrogen for (THOMSEN), 1873, 126, 838.
- chemical equilibrium** between hydrogen and (LEMOINE), 1875, 608; 1876, i., 38; 1878, A., 265.
- action** of sunlight on hydrogen and (LEMOINE), 1878, A., 266.
- affinity** of oxygen for (THOMSEN), 1873, 1188.
- and arsenious sulphide**, behaviour of, at high temperatures (SCHNEIDER), 1881, A., 686.
- and mercuric oxide**, action of, on m-amidobenzoic acid (BENEDIKT), 1875, 894.

**Iodine** and mercuric oxide, action of, on anthracene (ZEHLER), 1876, ii., 80.  
 action of, on carminic acid and, on haematin (FRÉBAULT), 1877, i., 347.  
 action of chlorine on (HANNAY), 1879, T., 169.  
 influence of water on the action of chlorine on (SODINI), 1877, ii., 276.  
 action of, on chromium dichloride (MACLIVOR), 1874, 26.  
 action of, on chromium trioxide (WALZ), 1873, 141.  
 and aluminium, simultaneous action of, on ether and compound ethers (GLADSTONE and TRIBE), 1876, ii., 357.  
 action of, on some hydrocarbons of the aromatic series (SCHÜTZENBERGER), 1873, 498.  
 action of hydrogen dioxide on (FAIRLEY), 1877, i., 22.  
 action of lead peroxide on (DITTE), 1882, A., 143.  
 different behaviour of, to mercuric oxide under different conditions (LIPPMANN), 1876, i., 44.  
 and sulphur, behaviour of, to mercury (v. SCHRÖTTER), 1873, 476.  
 reaction of, with sulphurous acid (MENKE), 1879, A., 352.  
 behaviour of, with sulphuric anhydride and the hydrates of sulphuric acid (WEBER), 1882, A., 803.  
 action of, on thiocarbamide (LETNY), 1876, i., 910.  
 reaction between sodium thiosulphate and (PICKERING), 1880, T., 128.  
 action of, on uric acid (WURTZ), 1874, 368.  
 power of seaweeds in taking, from sea-water (STANFORD), 1878, A., 170.  
 derivatives, organic, preparation of, by means of iodine and mercuric oxide (WESELSKY), 1875, 345.  
 compounds, heat of solution of (THOMSEN), 1877, ii., 693; 1879, A., 6.  
   with alkaloids (BAUER), 1875, 466; (HILGER), 1876, i., 404.  
   with starch (SONNSTADT), 1874, 352.  
 substitution-products (WESELSKY), 1873, 761; 1875, 139.  
**Hydriodic acid** (*hydrogen iodide*), preparation of (BANNOW), 1875, 999; (KOLBE), 1877, ii., 109; (BRUYLANTS), 1880, A., 89.  
 dissociation of (LEMOINE), 1875, 608; 1876, i., 38; 1877, ii., 828; 1878, A., 265; 1881, A., 1096.

**Hydriodic acid** (*hydrogen iodide*), or mixtures of the two constituents of, in equivalent proportions, action of heat, pressure, and sunlight on (LEMOINE), 1878, A., 265.  
 action of, on hemipinic acid (BECKETT and WRIGHT), 1876, i., 291.  
 action of, on molybdenum trioxide (MAURO and DANESI), 1881, A., 1084.  
 action of, on naphthalene (WREDEN and DE ZNATOWICZ), 1877, i., 466.  
 action of oxygen on (LEMOINE), 1878, A., 266.  
 action of phosphorus on (DAMOISEAU), 1881, A., 222.  
 action of, on toluene (WREDEN), 1876, i., 914.  
 reduction of aromatic compounds by phosphorus and (GRAEBE), 1876, i., 70.  
 etherification of (VILLIERS), 1880, A., 711.  
 reducing action of, at low temperatures on ethers and mixed ethers (DA SILVA), 1876, i., 60.  
 laws relating to the removal of, from organic compounds, and its addition to them (SAYTZEFF), 1876, i., 541.  
 compounds of, with ammonia (TROOST), 1881, A., 972.  
   with tellurous oxide (DITTE), 1876, ii., 607.  
**Iodides**, preparation of (RICE), 1873, 1104.  
 molecular conditions of certain (LEA), 1874, 964.  
 action of ether on (FERRIÈRE), 1873, 365.  
 action of mercuric ethide on (SUIDA), 1882, A., 409.  
 behaviour of, to the guaiacum-copper test for prussic acid (SCHÄR), 1874, 922.  
 new reaction of iodates and (CORNE), 1877, i., 491.  
 double, thermochemistry of (BELLATI and ROMANESE), 1881, A., 217.  
   change of colour in certain (BÖTTGER), 1878, A., 112.  
**Polyiodides** (JOHNSON), 1878, T., 183.  
**Iodine oxy-acids**, detection of, in nitric acid (BILTZ), 1878, A., 243.  
**Iodic acid**, preparation of (REICHARDT), 1874, 1133; (SODINI), 1877, i., 271; (STEVENSON), 1878, A., 112.

- Iodic acid**, formation and decomposition of (THOMSEN), 1875, 224.  
 formation of, in flames containing iodine (SALET), 1875, 608.  
 basicity and constitution of (THOMSEN), 1874, 434.  
 thermic phenomena of (BERTHELOT), 1877, ii., 274.  
 heat of formation of (THOMSEN), 1873, 1189.  
 specific gravity and specific volume of solutions of (THOMSEN), 1874, 433.  
 non-production of ozone in the crystallisation of (LEEDS), 1880, A., 213.  
 as a test for morphine (BELL), 1880, A., 68.  
 estimation of, by reduction with zinc and copper in presence of water (THORPE), 1873, 548.  
 separation of, from periodic acid (KAEMMERER), 1874, 1006.
- Iodates**, preparation of (REICHARDT), 1874, 1133.  
 action of oxalic acid on (GUYARD), 1879, A., 593.  
 action of phosphorus on (POLLACCI), 1874, 338; 1877, i., 344; (CORNE), 1877, i., 491, 578; 1879, A., 103.
- Periodic acid**, basicity and constitution of (THOMSEN), 1873, 595; (V. BASAROFF), 1873, 596.  
 heat of formation of (THOMSEN), 1873, 1189.  
 specific gravity and specific volume of solutions of (THOMSEN), 1874, 433.  
 separation of, from iodic acid (KAEMMERER), 1874, 1006.
- Periodides**, acid (JÖRGENSEN), 1877, i., 210, 713; ii., 571.
- Iodine acetate**, Schützenberger's (ARONHEIM), 1879, A., 452.  
 bromide, reaction of, with water (BORNEMANN), 1878, A., 11.  
 chloride (HANNAY), 1873, 815; (BORNEMANN), 1877, ii., 110.  
 preparation and properties of (THORPE), 1880, T., 174.  
*trichloride* (BRENKEN), 1875, 999; (CHRISTOMANOS), 1877, ii., 163.  
 specific gravity of (CHRISTOMANOS), 1877, ii., 697.  
 action of aromatic substances on excess of (MERZ and RUOFF), 1876, ii., 511; 1877, i., 706.  
 chlorides, action of water on (SCHÜTZENBERGER), 1877, ii., 110; (BORNEMANN), 1878, A., 11.
- Iodine trioxide**, preparation of (OGIER), 1878, A., 11.
- Iodine**, detection, estimation and separation:—  
 testing of bromine for (HAGER), 1873, 528.  
 test for (KERN), 1876, ii., 325.  
 ferric chloride as a test for (TESSIER), 1873, 527.  
 detection of, by platinum chloride (FIELD), 1881, A., 644.  
 reactions during the transformation of starch with malt-extract (BROWN and HERON), 1879, T., 641.  
 and starch reaction (PUCHOT), 1877, i., 107.  
 causes of failure in the detection of small quantities of (CHATIN), 1876, i., 960.  
 detection and estimation of, in presence of chlorine and bromine (DONATH), 1880, A., 285.  
 detection of, in potassium bromide (HESSE), 1874, 601.  
 detection of, in urine (FIELD), 1881, A., 644.  
 titration of, by stable standard solutions (ALLARY), 1880, A., 285.  
 estimation of (PELLIEUX and ALLARY), 1881, A., 307.  
 estimation of, by ammonium thiocyanate (HERTZ), 1879, A., 973.  
 estimation of, by Carius's method (LINNEMANN), 1873, 527.  
 estimation of, by precipitation (MOHR), 1874, 1099.  
 estimation of, in presence of chlorine or bromine (HÜBNER), 1873, 939.  
 estimation of, in presence of chlorine (RAMMELSBURG), 1874, 815.  
 estimation of, in cuprous iodide (ULEX), 1876, i., 747.  
 estimation of, in organic compounds (KOPP), 1876, i., 961.  
 estimation of, in organic substances and in vegetable and animal compounds (BRÜGELMANN), 1877, i., 739.  
 estimation of, in kelp (SCHOTT), 1879, A., 1051.  
 estimation of, in urine (HILGER), 1874, 717.  
 separation and estimation of chlorine, bromine and (GUYARD), 1879, A., 670.  
 See also Halogens.
- Iodine-green** (SPRINGMÜHL), 1874, 611, 720; (VOGEL), 1879, A., 84.  
 on linen (ANON.), 1873, 422.  
 See also Aniline-green.

- Iodine tincture (CASTHÉLAZ), 1882, A., 1010.
- Iodobenzanilide (HÜBNER), 1878, A., 143.
- 2:4-*di*Iodobenzanilide (RUDOLPH), 1878, A., 423.
- Iodobenzene (*phenylic iodide*), preparation of (GREENE), 1880, A., 316.  
action of nitric acid on (KÖRNER), 1876, i., 211.
- di*Iodobenzenes, *o*-, *m*- and *p*-, constitution of (KÖRNER), 1876, i., 233.
- Iodobenzeneazoxyiodobenzene, *m*- and *p*- (GABRIEL), 1877, i., 307.
- Iodobenzenesulphonic acid. See Benzenesulphonic acid.
- o*-Iodobenzenesulphonic chloride and amide (BAHLMANN), 1877, ii., 611.
- p*-Iodobenzoic acid (GLASSNER), 1875, 888.
- Iodobenzylamines, *p*-mono-, -*di*-, and -*tri*- (MABERY and JACKSON), 1878, A., 422.
- p*-Iodobenzyl alcohol and bromide (MABERY and JACKSON), 1878, A., 421.
- o*-Iodobenzyl bromide and its derivatives (MABERY and ROBINSON), 1882, A., 1057.
- p*-Iodobenzyl thiocyanate (MABERY and JACKSON), 1878, A., 422.
- Iodobetorcinol (STENHOUSE and GROVES), 1880, T., 403.
- Iodobromite, a new silver haloid (V. LASAULX), 1879, A., 365.
- Iodobutylene (*crotonyl iodide*) (LIEBEN and ZEISEL), 1881, A., 711.
- Iodocamphor (HALLER), 1879, A., 329.
- Iodocaproic acid. See Iodohectic acid.
- Iodochromammonium salts (JÖRGENSEN), 1882, A., 468.
- di*Iodochrysin (PICCARD), 1873, 1237.
- Iododiethyl oxide (BAUMSTARK), 1875, 140.
- tetr*Iododihydroxydiphenylsulphone (ANNAHEIM), 1874, 796.
- tetr*Iododiphenylenequinone (KAEMMERER and BENZINGER), 1878, A., 574.
- di*Iodo-*s*-diphenylhydrazine, *m*- and *p*- (GABRIEL), 1877, i., 307.
- p*-*di*Iododiphenylic sulphide (KRAFFT), 1875, 154.
- di*Iododiphenylquinol (KAEMMERER and BENZINGER), 1878, A., 574.
- Iodoethyl-. See Iodethyl-.
- Iodoform (ROTHER), 1874, 564.  
formation of (RICE), 1877, ii., 423.  
action of the copper-zinc couple on (GLADSTONE and TRIBE), 1875, 512.
- Iodoform, action of mercuric ethide on (SUIDA), 1882, A., 409.  
solvents for (VULPIUS), 1882, A., 1013.  
mercury salt of (SAKURAI), 1881, T., 485.  
reaction (TOLLENS), 1882, A., 107.
- Iodohectic acid. See Hexylic iodides.
- Iodohectic acid (FITTIG), 1880, A., 377.
- tri*Iodohomofluorescein (SCHWARZ), 1880, A., 552.
- 3-Iodo-*p*-hydroxybenzaldehyde (HERZFELD), 1878, A., 423.
- $\beta$ -Iodolactic acid and some of its salts (MELIKOFF), 1881, A., 712.
- Iodomethane. See Methylic iodide.
- di*Iodomethane. See Methylenic iodide.
- tri*Iodomethane. See Iodoform.
- tetr*Iodomethane. See Carbon *tetr*-iodide.
- $\beta$ -Iodonaphthalene (JACOBSON), 1881, A., 736.
- 1-Iodo- $\beta$ -naphthol (MELDOLA), 1881, T., 47.
- Iodonitraniline. See Aniline.
- Iodonitrobenzene. See Benzene.
- 4:3-Iodonitrobenzoic acid (GLASSNER), 1875, 888.
- Iodonitrobenzoic acids, isomeric, and their salts (GROTHE), 1879, A., 377.
- di*Iodonitrodihydroxydiphenylsulphone (ANNAHEIM), 1876, ii., 296.
- Iodonitrophenol. See Phenol.
- 6:4-Iodonitrophenol-2-sulphonic acid (POST and BRACKEBUSCH), 1874, 476.
- 5-Iodonitrosalicylic acid (HÜBNER), 1879, A., 928.
- Iodophenols, *o*-, *m*-, and *p*- (LOBANOFF), 1874, 259.  
constitution of (KÖRNER), 1876, i., 235.
- p*-Iodophenylacetic acid and *p*-iodophenylacetoneitrile (*p*-iodobenzyl cyanide) (MABERY and JACKSON), 1878, A., 422.
- p*-Iodophenylphthalimide (GABRIEL), 1879, A., 323.
- $\omega$ -Iodo- $\beta$ -phenylpropionic acid (FITTIG and BINDER), 1879, A., 378.
- $\beta$ -Iodopropionic acid (MELIKOFF), 1880, A., 800.  
preparation of (MULDER), 1877, ii., 312.  
decomposition of, by water (FITTIG and THOMSON), 1880, A., 380.
- $\alpha\beta$ -*di*Iodopropylic alcohol, action of potash on (HÜBNER and LELLMANN), 1880, A., 538; 1881, A., 242.
- s*-*di*Iodoisopropylic alcohol. See Glyceryl diiodhydrin.



- Iodorcinol**, *mono-* and *tri-* (STENHOUSE), 1873, 275; 1874, 585.
- Iodoresorcinol** (STENHOUSE), 1873, 275; 1874, 585.
- triIodoresorcinol** (MICHAEL and NORTON), 1877, i., 463; (CLAASSEN), 1878, A., 868.
- Iodoresorcinolsulphonic acid**, alkali salts of (FISCHER), 1881, A., 1149.
- Iodosalicylic acid**. See Salicylic acid.
- p-Iodotoluenesulphonic acid** ( $\alpha$ - and  $\beta$ -acids) (GLASSNER), 1875, 897.
- 3:5-diIodo-p-toluidine** (MICHAEL and NORTON), 1878, A., 407.
- Iodovaleric acid**. See Valeric acid.
- Iodovanillin** (TIEMANN and HAARMANN) 1874, 896.
- Ions**, transference of (KIRMIS), 1879, A., 193.
- Ipecacuanha** (PODWYSSOZKI), 1880, A., 720.
- Ipomæic acid** (NEISON and BAYNE), 1874, 729.
- Ipomic acid**. See Sebacic acid.
- Iridium**, atomic weight of (SEUBERT), 1879, A., 125.
- pure, preparation of (MATTHEY), 1879, A., 773.
- Holland's process for melting, and some of its properties (DUDLEY), 1882, A., 703.
- specific gravity of pure (SAINTE-CLAIRE DEVILLE and DEBRAY), 1876, i., 523.
- action of, on ethylic alcohol and formic acid (SAINTE-CLAIRE DEVILLE and DEBRAY), 1874, 1076.
- oxidation of (WILM), 1882, A., 1033.
- photographic pictures on (WILLIS), 1874, 1019.
- Iridium alloys with platinum** (MATTHEY), 1879, A., 772; (BROCH, SAINTE-CLAIRE DEVILLE and STAS), 1881, A., 680; (ANON.), 1881, A., 793.
- specific gravity of (SAINTE-CLAIRE DEVILLE and DEBRAY), 1876, i., 523.
- with zinc, action of acids on (DEBRAY), 1880, A., 707.
- Iridium**, double salts of dyad (SEUBERT), 1879, A., 125.
- Iridammonium compound**, new salt of an (BIRNBAUM), 1880, A., 13.
- Iridium sodium chloride**, crystalline form of (v. LASAULX), 1875, 613.
- Iris florentina**, oil of (HAGER), 1876, ii., 104; (FLÜCKIGER), 1876, ii., 644.
- Iron**, native (DE CHANCOURTOIS), 1878, A., 475.
- Iron**, native, from Greenland (NAUCK-HOFF), 1874, 347; (STEENSTRUP), 1877, ii., 578; (SMITH), 1879, A., 892; (WÖHLER), 1881, A., 515.
- meteoric. See Meteoric iron.
- platiniferous (SAINTE-CLAIRE DEVILLE and DEBRAY), 1880, A., 222.
- pyrophoric (BÖTTGER), 1879, A., 119; (MOISSAN), 1881, A., 74.
- titanic. See Ilmenite.
- from pyrites-residues (HOFMANN), 1876, i., 119.
- nomenclature of steel and (ANON.), 1877, ii., 239.
- presence of, in air (TISSANDIER), 1874, 672; 1876, i., 353; 1881, A., 843; (TACCHINI), 1879, A., 515; 1880, A., 709.
- composition of a specimen of, produced in the manufacture of Heaton's steel plates (CABELL), 1874, 1188.
- ancient, composition of (ARNOLD), 1879, A., 1074.
- found in one of the air-passages of the Great Pyramid in 1837 (FLIGHT), 1882, T., 140.
- impurities in, produced by the precipitation process (SIEMENS), 1873, 670.
- absorption spectrum of (BAYLEY), 1880, T., 834.
- spectrum of, in the sun (LOCKYER), 1881, A., 669, 957.
- thermochemical researches on (THOMSEN), 1876, i., 673; 1877, i., 574.
- passive state of (DE REGNON), 1874, 1127; (VARENNE), 1880, A., 211; 1881, A., 343; (RAMANN), 1881, A., 872.
- colour coefficient of (BAYLEY), 1880, T., 828; 1881, T., 363.
- crystalline structure of, especially of meteoric iron (TSCHERMAK), 1875, 873.
- passage of the galvanic current through (AUERBACH), 1879, A., 686.
- galvanic reduction of, under the influence of a powerful electromagnetic solenoid (v. JACOBI), 1873, 831.
- magnetisation of, molecular changes which accompany the (BARRETT), 1874, 766.
- finely-divided, magnetic behaviour of (v. WALTENHOFEN), 1879, A., 1000.
- nickeliferous, of Santa Catarina in Brazil, magnetism of (BECQUEREL), 1882, A., 369.

**Iron**, strength of, at low temperatures (ANON.), 1882, A., 345.  
 explanation of the strength of puddled (LE CHATELIER), 1876, ii., 278.  
 influence of manganese on the strength of (ANON.), 1882, A., 781.  
 influence of chemically-combined carbon on the hardness of (ANON.), 1878, A., 922.  
 occlusion of hydrogen by (CAILLETET), 1875, 425.  
 regeneration of burnt (CARON), 1874, 196.  
 welding of (LEDEBUR), 1876, i., 131.  
 rusting of (PHIPSON), 1881, A., 512.  
 etching of (KICK), 1874, 1025.  
 soldering of steel and (SIEBURGER), 1874, 719.  
 green bronze for (WEISKOPF), 1875, 492.  
 deposition of copper on, in a magnetic field (REMSSEN), 1881, A., 962.  
 copper-plating of steel and (GAUDIN), 1873, 955; (ANON.), 1875, 672.  
 simplification of the method of gilding, by the dry way (KIRCHMANN), 1873, 418.  
 galvanising of (THUM), 1876, i., 793; (JONES, SHEPARD and SEAMAN), 1882, A., 119.  
 covering of, with zinc (ANON.), 1874, 719.  
 burnishing of (HESS), 1877, i., 114.  
 amalgamation of (CASAMAJOR), 1878, A., 474.  
 conversion of, into steel (BOUSSINGAULT), 1874, 924; (CHEVREUL), 1874, 926.  
 action of acids on (JOHNSON), 1873, 848; (TRÈVE and DURASSIER), 1877, i., 175.  
 action of, on carbonic anhydride at a red heat (DUMAS), 1873, 37.  
 reaction between ferric sulphate and (PICKERING), 1880, T., 825.  
 finely divided, conduct of, towards nitrogen (REMSSEN), 1881, A., 1104.  
 action of nitric acid on (ACWORTH), 1875, 840; (ARMSTRONG and ACWORTH), 1877, ii., 79.  
 heated with phosphoric acid (STEAD), 1879, A., 93.  
 red hot, action of the vapour of potassium or sodium hydroxide on (DEBRAY), 1879, A., 887.  
 addition of tungsten and chromium to steel and (TENISON-WOODS and CLARK), 1874, 1118.

**Iron**, limit of the carburisation of (BOUSSINGAULT), 1875, 789.  
 decarburisation of (HUNT), 1873, 98.  
 oxidation of, in a gas furnace (TERREIL), 1877, ii., 709.  
 behaviour of, as reducing agent with acidified solutions of ferric salts (THORPE), 1882, T., 287, 294.  
 reduced by hydrogen (CARLES), 1875, 195; (MOISSAN), 1879, A., 887.  
 sulphuration of copper and, by a mineral water (DE GOUVENAIN), 1875, 1168.  
 gases in (MÜLLER), 1879, A., 437.  
 gases evolved from molten (LEDEBUR), 1874, 659.  
 solution of gases in (TROOST and HAUTEFEUILLE), 1873, 729; 1877, i., 51.  
 metals accompanying (TERREIL), 1877, ii., 523.  
 presence of nitrogen in (ALLEN), 1879, A., 1017; 1880, A., 749.  
 phosphorus in (STEAD), 1879, A., 90; (ARNOLD), 1879, A., 1074.  
 phosphorus and sulphur in (KERN), 1878, A., 1019.  
 native carburetted, artificial production of (MEUNIER), 1879, A., 693, 905.  
 dialysed (REDWOOD), 1880, A., 769; (MAGNIER DE LA SOURCE), 1880, A., 792.  
 constitution and properties of (PERSONNE), 1880, A., 356.  
 homogeneous (ANON.), 1878, A., 253, 257.  
 maniferous, formation of, in blast furnaces (ANON.), 1878, A., 176.  
 uses of (ANON.), 1878, A., 177.  
 spongy, manufacture of (BLAIR), 1875, 1302.  
 as material for purifying water (LEWIN), 1879, A., 343.  
 action of bacteria on (HATTON), 1881, T., 256.  
 amount of, in the blood and in foods (BOUSSINGAULT), 1873, 288.  
 distribution of, in the constituents of the blood (BOUSSINGAULT), 1873, 288, 398.  
 condition of, in blood (PAQUELIN and JOLLY), 1874, 996.  
 extraction of, from hæmin (THUDICHUM and KINGZETT), 1876, ii., 258.  
*Ferrum reductum*, examination of some samples of (LITTLE), 1873, 298.  
**Iron-alloys**, properties of (BILLINGS), 1878, A., 839.

**Iron-alloys** with chromium. See Chromium alloys.  
 with manganese, estimation of manganese in (KESSLER), 1879, A., 341.  
 See also Ferromanganese.  
 with mercury (CASAMAJOR), 1878, A., 937; (MOISSAN), 1879, A., 693.  
 preparation of (RAMANN), 1881, A., 879.  
 with platinum (FRENZEL), 1874, 1143; (SAINTE-CLAIRE DEVILLE), 1875, 534.  
**Iron compound** with copper and sulphur, crystals of, from Röras (BRÖGGER), 1881, A., 353.  
**Iron salts**, new (MOHR), 1874, 962.  
 action of, on pyrogallol (JACQUEMIN), 1873, 1259; 1874, 1016.  
 action of, on salicylic acid (PAGLIANI), 1879, A., 748.  
 as a substitute for tan in dressing hides (ANON.), 1878, A., 543.  
**Iron ammonium alum**, dissociation of (THOMSON), 1879, T., 811.  
 See also Alums.  
**Iron arsenides** (DESCAMPS), 1878, A., 706.  
 carbides, calorimetric investigation of (TROOST and HAUTEFEUILLE), 1875, 611.  
 hydroxides, dehydration of, by the time method (RAMSAY), 1877, ii., 395.  
 manganese manganate (HANNAY), 1878, T., 269.  
 nitride, occurrence of, among the "fumarole products" of Etna, and its artificial preparation (SILVESTRI), 1876, ii., 177.  
 oxides (MOISSAN), 1877, ii., 573; 1881, A., 74.  
 composition of a deposit containing (PATERSON), 1877, i., 355.  
 composition of a deposit from the condenser of H. M. S. "Spartan" containing (COWPER), 1882, T., 256.  
 analysis and valuation of spent, from gas-works (DAVIS), 1877, ii., 927.  
 See also Ferrous and Ferric oxides under Iron.  
 phosphates (MILLOT), 1875, 735; 1876, i., 880; (ERLENMEYER), 1879, A., 201.  
 behaviour of, in tartaric and citric acid solutions (WARINGTON), 1875, 993.  
 phosphides (SCHENK), 1873, 826.

**Iron phosphides**, crystallised, production of, by the fires in the coal beds at Commentry (MALLARD), 1881, A., 690.  
 hypophosphite, preparation of a solution containing hypophosphite of sodium, calcium, and magnesium and (GIBSON), 1882, A., 670.  
 silicides, calorimetric study of (TROOST and HAUTEFEUILLE), 1875, 1239.  
 silicofluoride (ŠTOLBA), 1877, i., 690; 1878, A., 114.  
 sulphates, basic (PICKERING), 1880, T., 807.  
 See also Ferrous and Ferric sulphates under Iron.  
 magnesium sulphate, examination of, by the time method (HANNAY), 1879, T., 459.  
 aluminium, chromium and manganese sesquisulphates (ETARD), 1879, A., 594.  
 phosphatesulphate (*diadochite*), two varieties of, found in the coal mine at Psychagnard (Isère) (CARNOT), 1881, A., 999.  
 sulphides, action of ether on (BERTHELOT), 1879, A., 771.  
 See also Ferrous and Ferric sulphides under Iron.  
 silver sulphide from Andreasberg (STRENG), 1879, A., 440.  
 amidonitrosulphide (DEMEL), 1879, A., 597.  
*dinitrosulphide* (PAWEL), 1880, A., 217, 218; (DEMEL), 1880, A., 218.  
 nitrothiocarbonate (PAWEL), 1880, A., 218.  
**Ferrous salts**, oxidation of (BUCHANAN), 1882, A., 572.  
 absorption of nitrogen dioxide by (GAY), 1880, A., 9.  
**Ferrous carbonate** (*siderite*) (LIVERSIDGE), 1881, A., 995.  
 chloride, heat of oxidation of (THOMSEN), 1875, 226.  
 heat of solution of (SABATIER), 1881, A., 964.  
 titration of, with potassium permanganate (FOLLENIUS), 1873, 531.  
 iodide, action of potassium chlorate on (PARKER), 1880, A., 704.  
 estimation of (PARKER), 1880, A., 749.  
 oxide (FeO), preparation of (WRIGHT and LUFF), 1878, T., 505.  
 allotropic modifications of (MOISSAN), 1881, A., 76.

**Ferrous oxide** ( $\text{FeO}$ ), action of carbonic oxide, carbon, and hydrogen on (WRIGHT and LUFF), 1878, T., 506.

See also Iron estimation.

sulphate and its double salts (CARO), 1873, 246.

heat evolved in the action of chlorine (BERTHELOT), 1873, 1095.

anhydrous and hydrated, specific gravity of (THORPE and WATTS), 1880, T., 114.

precipitated by alcohol (CARO), 1873, 246.

See also Iron sulphates.

anhydro-sulphate (BOLAS), 1874, 212.

ammonium and potassium sulphates (CARO), 1873, 246.

sodium sulphate (MOHR), 1874, 962; (BILTZ), 1875, 44.

sulphide, presence of, in char (SMITH), 1875, 299.

behaviour of copper ammonium chloride with (STOCK), 1880, A., 12.

See also Iron sulphides.

potassium sulphide, nitroso- (ROSENBERG), 1880, A., 10.

sodium sulphide, nitroso-, so-called (PAWEL), 1880, A., 218.

**Ferrosoferric oxide** ( $\text{Fe}_3\text{O}_4$ ) (*magnetic oxide of iron; triferric tetroxide*), preparation of (WRIGHT and LUFF), 1878, T., 508.

furnace product containing (VÖLKER), 1873, 254.

allotropic modification of (MOISSAN), 1878, A., 557; 1881, A., 75.

volume constitution of (SCHRÖDER), 1874, 875.

heat of formation of (BERTHELOT), 1881, A., 219.

crystals of, formed by roasting a spathic mineral (BOUSSINGAULT), 1877, i., 446.

action of carbonic oxide, carbon and hydrogen on (WRIGHT and LUFF), 1878, T., 509.

new method of producing a coating of, on iron surface (TWEEDIE), 1879, A., 840.

See also Magnetite.

**Ferrosoferric sulphate** (ETARD), 1879, A., 104.

**Ferric salts**, dissociation of dissolved (WIEDEMANN), 1879, A., 343.

behaviour of zinc, magnesium, and iron as reducing agents with acidified solutions of (THORPE), 1882, T., 287.

**Ferric salts**, reaction of salicylic acid with (PAGLIANI), 1879, A., 748.

of organic acids, decomposition of, by light (EDER), 1881, A., 670.

tests for (WAGNER), 1882, A., 556.

**Ferric chloride**, heat of solution of (SABATIER), 1881, A., 964.

vapour-density of (V. and C. MEYER), 1879, A., 1014.

decomposition of, by light (EDER), 1881, A., 670.

affinity in solutions of (MÜLLER), 1873, 847; 1874, 231.

behaviour of silver chloride to (SAUER), 1874, 335.

action of, on the isomeric naphthols (DIANIN), 1874, 262.

action of, on narcine (BECKETT and WRIGHT), 1876, i., 469.

as a purifier of water (GUNNING), 1879, A., 1072.

behaviour of, to albumin (BUCHNER), 1882, A., 1141.

physiological action of (RABUTEAU), 1873, 398.

as a test for iodine (TESSIER), 1873, 527.

chromate, basic (KLETZINSKY), 1873, 657.

ammonium and potassium chromates (HENSEN), 1879, A., 887; 1880, A., 10.

hydroxide (*ferric hydrate*), effect of intense cold on (SHUTTLEWORTH), 1878, A., 936.

colloidal (MAGNIER DE LA SOURCE), 1880, A., 792.

estimation of, without filtering, washing, and drying (POPPER), 1879, A., 480.

See also Iron hydroxides and Limonite.

oxide ( $\text{Fe}_2\text{O}_3$ ), preparation of (WRIGHT and LUFF), 1878, T., 8.

prepared from meteoric iron, magnetic anomaly of (SMITH), 1875, 426.

method of preparing, from the sulphates, so as not to obtain basic sulphates (SOLDAINI), 1877, i., 283.

colloidal, laws of solubility of, in sulphuric acid (WIEDEMANN), 1874, 863.

ignited, dissolving of (CLASSEN), 1878, A., 753.

action of a mixture of carbon monoxide and dioxide on (WRIGHT and LUFF), 1878, T., 505.



**Ferric oxide**, action of, on potassium carbonate (MILLS and PRATT), 1879, T., 337.  
 action of, on potassium chlorate (MILLS and DONALD), 1882, T., 18.  
 action of titanium dichloride, chlorine and hydrochloric acid on mixtures of titanate acid and (FRIEDEL and GUÉRIN), 1876, ii., 46; 1877, i., 173.  
 time required to produce given amounts of deoxidation of, at different temperatures (WRIGHT and RENNIE), 1880, T., 765.  
 rehydration of (CROSS), 1879, T., 798.  
 pure anhydrous, reduction of, by pure carbon *in vacuo* (PARRY), 1873, 1006.  
 reduction of, by hydrogen and by carbonic oxide (WRIGHT and RENNIE), 1880, T., 757.  
 heat disturbances during the reduction of, by carbonic oxide, hydrogen and carbon (WRIGHT and LUFF), 1878, T., 3.  
 as a reducing agent (POLLACCI), 1878, A., 685.  
 as a generator of nitric acid (PESCI), 1876, i., 188.  
 dialysed, as a mordant in dyeing (ANON.), 1874, 100.  
 natural compound of cuprous oxide and (FRIEDEL), 1873, 1107.  
 estimation of. See Iron estimation.  
 See also *Hæmatite*.  
 phosphate (MILLOT), 1876, i., 880.  
 composition of (WAINE), 1877, ii., 844.  
 See also Iron phosphates.  
 sodium pyrophosphate, anhydrous (JÖRGENSEN), 1878, A., 199.  
 potassium silicate analogous to leucite (HAUTEFEUILLE), 1881, A., 389.  
 sulphate and its reactions (PICKERING), 1880, T., 807.  
 hydrated (FRENZEL), 1876, i., 53.  
 crystallised (MEISTER), 1876, i., 680.  
 sulphide (PHIPSON), 1875, 238.  
 See also Iron sulphides and Marcasite.

**Iron organic compounds**:—  
 aluminates (HOLDERMANN), 1879, A., 170; (BUCHNER), 1882, A., 1141.

**Iron organic compounds**:—  
 bismuth citrates (ROTHER), 1876, ii., 173.  
 borocitrates (SCHEIBE), 1881, A., 89.  
 cyanogen compounds (SKRAUP), 1876, i., 377; 1877, ii., 597.  
 mercaptide (CLAËSSON), 1877, i., 295.  
**Iron castings**, malleable (TUNNER), 1878, A., 623.  
 pipes, disappearance of nitrogenous organic matter from water running through (BLYTH), 1875, 386.  
 plates, action of sea water on (KERN), 1879, A., 564.  
 rails from, manufacture of (ANON.), 1877, ii., 240; (BELL), 1879, A., 185.  
 stoves, red-hot, evolution of carbonic oxide from (FISCHER), 1880, A., 592.  
 tacks, tinning of (WILEY), 1875, 1302.  
 wire, certain remarkable molecular changes occurring in, at a low red heat (BARRETT), 1874, 230.  
 effect of acid on the interior of (REYNOLDS), 1874, 546.  
 effect of the carbon in, on the use of the wire in standardising a solution of potassium permanganate (IRBY), 1874, 1179.  
 to make, of silvery whiteness (HEEREN), 1875, 672.

**Iron ores**:—  
**Iron-glance** from Biancavilla (v. LASAULX), 1881, A., 237.  
 magnetic pseudomorph after (v. ZEPHAROVICH), 1879, A., 363.  
**Iron-micas** (RAMMELSBERG), 1880, A., 225, 614; 1881, A., 533.  
**Iron-ore**, clay-band. See Limonite.  
 magnetic. See Magnetite.  
 spathic. See Chalybite.  
 specular (FRENZEL), 1874, 1143.  
 epidote and chabasite from Mal Inverno (DOELTER), 1876, i., 887.  
 physical and chemical changes which it undergoes when smelted in the eupola for the Bessemer process (v. KÖPPEN), 1879, A., 840.  
 titaniferous. See Ilmenite.  
 of Bidassoa; its treatment by calcination and lixiviation (RÖHRIG and HAASS), 1874, 97.  
 from Canada (HOFFMANN), 1881, A., 546.  
 occurrence of, between Prag and Beraun (VÁLA and HELMHACKER), 1875, 1170.

**Iron ore**, recently discovered, in Russia (KERN), 1876, i., 889.  
 containing manganese, from the neighbourhood of St. Petersburg (LJUBAVIN), 1882, A., 171.  
 dephosphorisation of (GAUTHIER), 1877, i., 759.  
 reduction of, by powdered zinc (BROWN), 1881, A., 1170.  
**Iron pyrites**. See Pyrites.  
**Iron sinter**. See Pitticite.  
**Ironstone**, Cleveland, phosphorus in (STEAD), 1879, A., 90.  
**Iron ores, estimation of:**—  
 analysis of (KERN), 1877, ii., 356; (LIPP and SCHNEIDER), 1878, A., 838; (ANON.), 1882, A., 426.  
 containing both phosphoric and titanitic acids, analyses of (DROWN and SHIMER), 1882, A., 777.  
 rapid colorimetric method of estimating manganese in (PICHARD), 1873, 407; (BRUNNER), 1874, 604, 816; (KOPPMAYER), 1874, 1009.  
 estimation of manganese and iron in manganiferous (RILEY), 1877, ii., 1; (PATTINSON), 1879, T., 368.  
 estimation of phosphorus in (ANON.), 1877, ii., 800; (KORSCHULT; CAIRNS), 1877, ii., 800; 1878, A., 166; (EGGERTZ), 1881, A., 465.  
 estimation of sulphur in (ROLLET), 1879, A., 974.  
 separation of silica in the analysis of (ROCHOLL), 1880, A., 745.  
**Iron manufacture:**—  
 industry, estimation of sulphur in the products of the (ROLLET), 1879, A., 974.  
 functions of manganese in the metallurgy of (TROOST and HAUTEFEUILLE), 1876, i., 883.  
 manufacture, Blair's process for (IRELAND), 1879, A., 89.  
 production of steel and (THOMA), 1874, 610.  
 preparation of, from its ores (TUNNER), 1873, 953, 1171; (SIEMENS), 1878, A., 619.  
 smelting in the cupola furnace (FISCHER), 1879, A., 564.  
 smelting of steel and (SIEMENS), 1873, 661.  
     rotatory furnace in (SIEMENS), 1873, 668.  
 preparation of, from pig iron containing phosphorus (SCHEERER), 1873, 98.  
 highly impregnated with silicon, conditions for the manufacture of, in blast furnaces (JORDAN), 1873, 1067.

**Iron manufacture:**—  
 manufacture of, in Belgium (LE CHATELIER), 1876, i., 789, 972.  
 iron furnace, Khern's, for use with lignite (ANON.), 1873, 98.  
 puddling furnace, Casson-Dermoy's (ANON.), 1878, A., 456.  
     action of (BELL), 1878, A., 95.  
 puddling, mechanical (TUNNER), 1875, 108.  
 puddling-process, incidental results of Dank's (DROWN), 1874, 1025.  
**Cast-iron** (*pig-iron*), malleable (FORQUIGNON), 1881, A., 766; 1882, A., 116; (ANON.), 1882, A., 1143.  
 manganiferous (TROOST and HAUTEFEUILLE), 1875, 790.  
     preparation of (JORDAN), 1878, A., 772; 1879, A., 755.  
     See also Ferromanganese.  
 phosphatic, behaviour of, during the puddling process (v. KERPÉLY), 1878, A., 815.  
 siliceous, preparation and use of (ANON.), 1879, A., 678.  
 white, specific gravity of (v. KÖRPER), 1879, A., 840.  
 carbon of (SCHÜTZENBERGER and BOURGEOIS), 1875, 788.  
 effect of phosphorus on (STEAD), 1879, A., 92.  
 purification of, from phosphorus (STEAD), 1879, A., 92; (KERN), 1879, A., 286; (HEAD), 1879, A., 1075; (v. WAGNER), 1880, A., 593; (FISCHER), 1881, A., 326.  
 preparation of basic furnace-linings for dephosphorising (ANON.), 1882, A., 1012.  
 desulphurising (ROLLET), 1882, A., 345.  
 removal of sulphur and silicon from (ANON.), 1876, i., 458.  
 action of mercuric chloride on (ZABUDSKY), 1882, A., 660.  
 action of soda on (BRUNCK and GRAEBE), 1881, A., 126.  
 action of a sulphur spring on (PRIWOZNIK), 1873, 1106.  
 carbohydrate from the chemically combined carbon in, and the estimation of that carbon in (ZABUDSKY), 1882, A., 427.  
 crystals extracted from, by ether or petroleum (SMITH), 1879, A., 771.  
 presence of copper in (KERN), 1877, i., 235.  
 direct deposition of copper on (WEIL), 1882, A., 670.

**Cast-iron** (*pig-iron*), enamel for (RAETZ), 1879, A., 755; (BERSCH), 1880, A., 833.

solution of gases in (TROOST and HAUTEFEUILLE), 1873, 729; 1877, i., 51.

Warner's method of refining (RIGO), 1876, i., 792.

scales which separate from molten (MUCK), 1875, 673.

**Spiegeleisen** (FORBES), 1873, 202.

composition of (ANON.), 1874, 1118.

specific heat of (v. KÖPPEN), 1879, A., 840.

crystalline form of (MALLARD), 1881, A., 789.

decarbonisation of, by heat (RAYMOND), 1876, ii., 225.

action of, in the Bessemer process (BENDER), 1873, 298.

use of, in the manufacture of steel (SIEMENS), 1873, 664.

fused, instead of ferromanganese in the Bessemer-process (RAYMOND), 1876, i., 453.

changes which it undergoes when smelted (v. KÖPPEN), 1879, A., 841.

absence of sulphur in (SIEMENS), 1873, 665.

**Wrought iron**, at the Paris Exhibition of 1878 (ANON.), 1879, A., 679.

manufacture of (DAVENPORT), 1873, 202.

direct process for making (DUPUY), 1879, A., 565; (ANON.), 1882, A., 344.

direct preparation of, from iron ores (ANON.), 1879, A., 409.

direct deposition of copper on (WEIL), 1882, A., 670.

enamel for (RAETZ), 1879, A., 755; (BERSCH), 1880, A., 833.

**Steel**, definition of (GREINER), 1874, 830.

nomenclature of (ANON.), 1877, ii., 239.

conversion of iron into (BOUSSINGAULT), 1874, 924; (CHEVREUL), 1874, 926.

conversion of bar iron into, by the cementation process (MARSDEN), 1881, T., 149.

cementation of (FORQUIGNON), 1882, A., 116.

smelting of iron and (SIEMENS), 1873, 661.

production of iron and (THOMA), 1874, 610.

**Steel**, new process for the production of (BAZAULT and ROCHE), 1873, 418; (ANON.), 1874, 718.

direct process for making (DUPUY), 1879, A., 565.

preparation of, from the ore (SIEMENS), 1873, 668; 1878, A., 619; (ANON.), 1879, A., 409.

production of, from pig-iron and iron ore (DAELEN), 1874, 719.

ferromanganese used in puddling fine-grained (ANON.), 1882, A., 344.

Bessemer process (KESSLER), 1873, 299, 540; (SCHWARZ), 1876, i., 794; (MÜLLER), 1878, A., 620; 1879, A., 566.

use of iron containing a large amount of silicon in the (TURNER), 1876, i., 130.

dephosphorising of iron in the (ANON.), 1882, A., 118.

Bessemer converters, action of (BELL), 1878, A., 95.

gases from (TAMM), 1880, A., 769.

separation of phosphorus and sulphur in (BELL), 1879, A., 185.

Bessemer flame, spectrum of (WATTS), 1873, 461.

casting of, preparation and use of alloys of manganese and silicon in the (KERN), 1877, ii., 522.

cast-, chromium crucible (KERN), 1878, A., 177.

preparation of (KERN), 1879, A., 567.

chrome- (BOUSSINGAULT), 1878, A., 772; 1879, A., 286.

crucible-, manufacture of (BELL), 1879, A., 1076.

manganese- (GAUTIER), 1877, ii., 376; (KERN), 1879, A., 567.

Mushet's (KICK), 1873, 204; (GRUNER), 1873, 955.

Siemens-Martin (KERN), 1880, A., 769; 1881, A., 667.

process for the production of (SIEMENS), 1873, 661.

thermoelectric position and electric conductivity of, in their relation to its hardness (BARUS), 1879, A., 999.

specific gravities of Bessemer, containing varying amounts of carbon (KOPPMAYER), 1874, 831.

specific resistance of (BARUS), 1879, A., 1000.

some changes in the physical properties of, produced by tempering (KIMBALL), 1877, i., 175.

**Steel**, new method of tempering (CARON), 1874, 196.  
 influence of heat on the structure of (METCALF), 1878, A., 1019.  
 effects of compression on (LAN), 1882, A., 1145.  
 strength of, at low temperatures (ANON.), 1882, A., 345.  
 etching of (KICK), 1874, 1025.  
 hardening of (JAROLIMEK), 1877, i., 113.  
 condition of carbon in, and the effect of hardening on it (HOGG), 1881, A., 478.  
 welding (KERN), 1879, A., 567.  
 mild, working of (KERN), 1879, A., 410.  
 soldering of iron and (SIEBURGER), 1874, 719.  
 impurities of (SIEMENS), 1873, 665.  
 presence of free ammonia in cast (REGNARD), 1877, ii., 169.  
 distribution of carbon in Bessemer (BELANI), 1873, 953.  
 a third form of carbon in (DEBRUNNER), 1879, A., 842.  
 gases in (MÜLLER), 1879, A., 437.  
 solution of gases in (TROOST and HAUTEFEUILLE), 1873, 729; 1877, i., 51.  
 manganese in (KESSLER), 1873, 204; (KERN), 1881, A., 950.  
 nitrogen in (ALLEN), 1879, A., 1017; 1880, A., 749.  
 oxygen in (KERN), 1877, ii., 815; 1878, A., 649.  
 containing phosphorus (GREINER), 1876, i., 454.  
 sulphur and phosphorus in Bessemer (ANON.), 1874, 830.  
 influence of acids on (JOHNSON), 1873, 848.  
 addition of tungsten and chromium to (TENISON-WOODS and CLARK), 1874, 1118.  
 influence of sulphur and copper on the working properties of (WASUM), 1882, A., 1246.  
 copper-plating on (GAUDOX), 1873, 955; (ANON.), 1875, 672; (WEIL), 1882, A., 670.  
 for the manufacture of dies (ROBERTS-AUSTEN), 1881, A., 856.  
**Steel-plates** (KERN), 1880, A., 356.  
 action of sea water on (KERN), 1879, A., 564.  
**Steel, rail**, analysis of (TROILIUS), 1882, A., 336.

**Steel wire**, and graving tool steel, to produce diamond hardness in (SCHÜTZLEDER), 1873, 418.  
**Iron, manufactured, analytical processes relating to:**—  
 analysis of (KESSLER), 1873, 408; (HARTLEY), 1875, 410; (ANON.), 1875, 913; (UELSMANN), 1876, ii., 657; 1877, ii., 224; 1882, A., 426; (GALBRAITH), 1877, ii., 357; (KERN), 1880, A., 73.  
 analysis of, with special reference to the estimation of carbon and silicon (WATTS), 1882, A., 1134.  
 detection of copper in (ANON.), 1877, ii., 926.  
 estimation of aluminium and chromium in (BLAIR), 1877, ii., 802.  
 use of Eggertz' method of estimating carbon in the selection of steel (v. EHRENWERTH), 1875, 1291.  
 estimation of carbon in (BRITTON), 1873, 295; (PIESSE), 1874, 188; (PACKER), 1874, 495; (KERN), 1877, i., 742; 1880, A., 1289; (MC CREATH), 1877, ii., 927; (KLEIN), 1879, A., 401; (JITSUM; WESTMORELAND), 1880, A., 751; (PARKER), 1881, A., 466; (EGGERTZ), 1882, A., 98; (TROILIUS), 1882, A., 337; (ZABUDSKY), 1882, A., 427; (WATTS), 1882, A., 1134.  
 estimation of chromium in (BLAIR), 1877, ii., 802; (ARNOLD), 1881, A., 646.  
 estimation of chromium and tungsten in (SCHÖFFEL), 1880, A., 288.  
 estimation of basic cinder and oxides in (BETTEL), 1881, A., 648.  
 estimation of manganese in (PICHARD), 1873, 407; (BRUNNER), 1874, 604, 816; (PIESSE), 1874, 711; (KOPPMAYER), 1874, 1009; (KERN), 1876, i., 110, 962; 1877, ii., 647; (PETERS), 1876, i., 750; (DESHAYES), 1878, A., 808; (PATTINSON), 1879, T., 372.  
 estimation of manganese in spiegeleisen (PARRY), 1874, 712; (KERN), 1876, i., 110; 1877, ii., 647; (GALBRAITH), 1876, i., 750; (RILEY), 1877, ii., 1; (PATTINSON), 1879, T., 371.  
 estimation of manganese and phosphorus in spiegeleisen (STÖCKMANN), 1877, ii., 648, 800.  
 estimation of oxygen in decarboxised, before the addition of spiegeleisen (BENDER), 1873, 298.



**Iron, manufactured, analytical processes relating to:—**

estimation of phosphorus in (ANON.), 1874, 830; 1877, ii., 800; (KORSCHULT; CAIRNS), 1877, ii., 800; 1878, A., 166; (BOUSSINGAULT), 1877, ii., 927; (RILEY), 1878, T., 104; (HASWELL), 1881, A., 194; (EGGERTZ), 1881, A., 465; (ARNOLD), 1881, A., 646; (AGTHE), 1882, A., 338; (SMITH), 1882, A., 897.

estimation of silicon in (DROWN), 1879, A., 974; (HASWELL), 1881, A., 194; (WATTS), 1882, A., 1134.

estimation of silicon, graphite, manganese, etc., in (PIESSE), 1874, 711; (WATTS), 1882, A., 1134.

estimation of silicon and titanium in (DROWN and SHIMER), 1881, A., 647.

estimation of sulphur in (MORRELL), 1874, 187; (PIESSE), 1874, 391; (KOPPMAYER), 1874, 496; (ANON.), 1874, 830; (BROWN), 1874, 918; (FRESENIUS), 1874, 919; (HIESCH), 1877, ii., 799.

**Iron (*in general*), detection, estimation and separation:—**

detection of, in nickel salts (BÖTTGER), 1874, 1101.

detection of, in tea (EDER), 1879, A., 854.

precipitation of, by ammonium succinate (YOUNG), 1880, T., 674.

titration of, with permanganate in presence of hydrochloric acid (KESSLER), 1882, A., 1323.

titration of, with sodium thiosulphate (CRAFTS), 1873, 1162; (HASWELL), 1881, A., 849.

estimation of, by stannous chloride (STOCK and JACK), 1875, 383, 783; (UELSMANN), 1877, ii., 223; (HINMAN), 1878, A., 608.

estimation of, in the presence of ferric oxide, organic acids, and sugar (EDER), 1880, A., 583; 1882, A., 98.

estimation of, in presence of phosphoric acid (PELLET), 1877, ii., 223.

estimation of, in commercial iron mordant (VOHL), 1874, 603.

estimation of, in iron ores (MACIVOR), 1874, 918; (PARNELL), 1875, 27; (ESILMAN), 1875, 285; (ANON.), 1878, A., 165.

estimation of, in manganiferous iron ores (RILEY), 1877, ii., 1.

**Iron (*in general*), estimation and separation:—**

estimation of, in clay ironstones containing pyrites (STOCK and JACK), 1875, 383, 783.

estimation of, in minium (BLUNT), 1875, 1290.

estimation of, in phosphates (ESILMAN), 1874, 190.

estimation of, in silicates (EARLY), 1875, 286; (DOELTER), 1879, A., 484.

estimation of, in silicates which are insoluble in the ordinary mineral acids (LEEDS), 1877, ii., 649.

estimation of, in waters (CARNELLEY), 1875, 285.

separation of, from aluminium (ILES), 1881, A., 645; (CARNOT), 1881, A., 1081; (ANON.), 1882, A., 426.

separation of, from alumina and manganese (CLASSEN), 1879, A., 970, 1055; (CLASSEN and V. REIS), 1881, A., 1082.

separation of, from aluminium oxide and phosphoric acid (FLIGHT), 1875, 592.

separation of chromium, uranium, and (DITTE), 1877, ii., 926.

separation of, from cobalt and nickel (ZIMMERMANN), 1880, A., 189; (MOORE), 1881, A., 1171.

separation of, from cobalt, nickel, manganese, and zinc (CLASSEN), 1877, ii., 924; 1879, A., 970; (CLASSEN and V. REIS), 1881, A., 1082.

influence of acetic acid on the separation of, as basic acetate from cobalt, nickel, manganese, and zinc (JUNGCK), 1877, i., 344; (JEWETT), 1880, A., 289.

separation of, from manganese (KRÄMER), 1877, ii., 805; (CLASSEN), 1879, A., 1055; (BEILSTEIN and JAWEIN), 1880, A., 61, 289; 1882, A., 97; (VOLHARD), 1880, A., 143; (HAGER), 1882, A., 97; (ANON.), 1882, A., 426.

separation of, from phosphorus (TUNNER), 1878, A., 352; (BELL), 1879, A., 185; (BLAIR), 1880, A., 74; (DEROME), 1880, A., 286.

separation of, from tungsten (COBENZL), 1881, A., 1171.

separation of, from uranium (BURCKER), 1878, A., 771; (ZIMMERMANN), 1880, A., 189.

separation of vanadic acid from alumina and (BETTENDORF), 1877, ii., 175, 922.

**Iron group**, absorption-spectra of salts of the metals of the, and their use in analysis (VOGEL), 1876, i., 739.  
cyanides of the metals of the (DESCAMPS), 1882, A., 154.

**Iron-copper group**, colour properties and colour relations of the metals of (BAYLEY), 1880, T., 828; 1881, T., 362.

**Irrigation** with sewage (ANON.), 1878, A., 742; (MÜLLER), 1878, A., 164; 1881, A., 842.

action of water in the process of (KÖNIG), 1878, A., 447; 1881, A., 638.

*m*-**Isatic acid**. See *m*-Amidophenylglyoxylic acid.

**Isatin** and its derivatives (SRIDA), 1878, A., 586; 1879, A., 937; (V. BAEYER), 1879, A., 937.

preparation of, from *o*-nitropropionic acid (V. BAEYER), 1881, A., 275.

synthesis of (V. BAEYER), 1878, A., 884; (CLAISEN and SHADWELL), 1879, A., 534.

constitution of (V. BAEYER), 1879, A., 937.

action of ammonia on (V. SOMMARUGA), 1878, A., 507, 798; 1879, A., 63; 1881, A., 434.

and allied compounds, action of phosphorus pentachloride on (V. BAEYER), 1879, A., 535.

test for (V. BAEYER), 1879, A., 937.

brom-, chloride (V. BAEYER), 1879, A., 938.

chlor- (V. BAEYER), 1879, A., 535.

nitr- (V. BAEYER), 1879, A., 938.

**Isatinamido-benzoic acid** and -acetic sulphite (SCHIEF), 1882, A., 304.

**Isatogenic acid** (V. BAEYER), 1882, A., 198.

"**Isatogensulphurous acid**" (V. BAEYER), 1882, A., 621.

**Isernite**, a new volcanic rock (BERTELS), 1875, 548.

**Iserine** and **iserite** from the Isergebirge (JANOVSKY), 1880, A., 369.

**Isethionamide** (SEYBERTH), 1874, 790.

**Isethionic acid** (CARL), 1881, A., 581.

preparation of (CLAËSSON), 1879, A., 777.

ammonium salt of, changes of, at high temperatures (CARL), 1880, A., 28.

**Isinglass**, constitution of (SCHÜTZENBERGER and BOURGEOIS), 1876, ii., 104.

**Iso-compounds**. See under the substance to which *iso* is prefixed.

**Isodimorphism** of arsenious and antimonious oxides (GAENGE), 1881, A., 791.

**Isomerides**, mathematical theory of (CAYLEY), 1875, 127.

physical properties of homologues and (BROWN), 1877, ii., 836.

regularity of the relations in physical properties of (KÖRNER), 1876, i., 237.

specific refraction and dispersion of (GLADSTONE), 1881, A., 213.

heat of combustion of (WRIGHT), 1874, 67.

group of, derived from the fermentation alcohols (PIERRE and PRICHOT), 1873, 258.

$C_2H_4Br$  (FRIEDEL), 1874, 1150; (LAGERMARK), 1874, 1151.

$C_{10}H_{16}HCl$ , method of distinguishing between (RIBAN), 1874, 153.

**Isomerism**; benzene and dipropargyl (BERTHELOT and OGIER), 1881, A., 719.

in the propyl or tri-carbon series (REBOUL), 1879, A., 127.

amongst the so-called aromatic substances containing six atoms of carbon (KÖRNER), 1876, i., 204.

in the pyridine and quinoline series (SKRAUP), 1881, A., 744.

influence of, on the etherification of alcohols and acids (MENSCHUTKIN), 1881, A., 36, 883.

physical, of hydro- and isohydrobenzoïn (ZINCKE), 1880, A., 118.

**Isometric symmetry** (BERTHELOT and JUNGLEISCH), 1874, 763.

**Isomorphism** (KOPP), 1882, A., 1269.

molecular weight and physiological action, connection between (BLAKE), 1875, 96; 1881, A., 629; 1882, A., 879.

certain cases of (BAKER), 1879, T., 760.

use of, for the determination of atomic weights (KOPP), 1879, A., 769.

of the anhydrous sulphates of the alkalis and alkaline earths (ARZRUNI), 1873, 247.

**Isomorphous admixture**, a curious case of; trichromates and tetrachromates of potassium and of ammonium (WYRUBOFF), 1882, A., 146.

**Isomorphous compounds**, crystallographic-optical relations of (TORSÖE and CHRISTIANSEN), 1873, 994; 1874, 767.

inequality of action of, on the same solution (LECOQ DE BOISBAUDRAN), 1875, 281, 729.

**Isoprene** (*pentinene*), action of haloid acids on (BOUCHARDAT), 1880, A., 323.

- Isopyre** (FISCHER), 1881, A., 990.  
*Isopyrum thulictroides*, alkaloids from (V. HARTSEN), 1873, 511.  
**Isuretin**. See Formamidoxime.  
**Itaconamide and itaconanilide** (STRECKER), 1882, A., 1281.  
**Itaconic acid and its derivatives** (BARBAGLIA), 1874, 787; (BÖTTINGER), 1877, i., 591; (CLAUS and LISCHKE), 1881, A., 800; (PETRI), 1881, A., 1032; (ANSCHÜTZ), 1882, A., 829; (STRECKER), 1882, A., 1281.  
 constitution of (HENRY), 1875, 1177.  
 electrolysis of, and reaction of, with ferric chloride (AARLAND), 1873, 377.  
 action of zinc-dust and alcohol on (BÖTTINGER), 1877, i., 590.  
 additive-products of (FITTIG), 1877, ii., 737.  
**Itaconic anhydride** (ANSCHÜTZ and PETRI), 1881, A., 35; (MARKOWNIKOFF), 1881, A., 155.  
**Itaconic chloride** (PETRI), 1881, A., 1032.  
**Itamalic acid**. See Hydroxypyrotartaric acid.  
**Ivory**, red colouring of (PUSCHER), 1873, 423.  
**Ivy** (*Hedera Helix*), constituents of (V. HARTSEN), 1876, i., 613.  
 glucoside from (VERNET), 1881, A., 440.  
**Isolyte** (WEIDEL), 1878, A., 17.

## J.

- Jaborandi**, alkaloids of (HOLMES), 1875, 1269; (KINGZETT), 1876, ii., 367; 1877, ii., 907; (HARNACK and MEYER), 1880, A., 898; (V. POEHL), 1881, A., 447.  
 chemical analysis of (RABUTEAU), 1875, 100.  
**Jaborandine**, nitrate and hydrochloride of (CHASTAING), 1882, A., 1115.  
**Jaborine** (HARNACK and MEYER), 1880, A., 898.  
*Jacaranda procera*, composition of the leaves and bark of (ANON.), 1882, A., 764.  
**Jacobsite** (V. NORDENSKIÖLD), 1879, A., 23.  
**Jadeite** (FISCHER), 1881, A., 990.  
 See also Nephrite.  
**Jalap**, resins contained in (STEVENSON), 1880, A., 717.  
**Jalapin** (STEVENSON), 1880, A., 717.  
**Jamesonite** (VOM RATU), 1881, A., 548.  
 from the Province of Huelva (GENTH), 1881, A., 1111.  
**Japaconine and japaconitine and their reactions** (WRIGHT and LUFF), 1879, T., 393.  
**Jarosite** from Beresowsk (v. KOKSCHAROFF), 1876, i., 525.  
 from a new locality (KÖNIG), 1882, A., 577.  
**Jaulingite** (DOELTER), 1881, A., 359.  
**Javanine** (HESSE), 1878, A., 437.  
**Jeffersonite** (PISANI), 1873, 479.  
**Jervic acid**. See Chelidonic acid.  
**Jervine** (MITCHELL), 1874, 590; 1875, 1267; (WRIGHT and LUFF), 1878, T., 335; 1879, T., 407; (TOBIEN), 1878, A., 589; (WRIGHT), 1879, T., 421; (BULLOCK), 1880, A., 170.  
 does *Veratrum viride* contain an alkaloid other than? (BULLOCK), 1876, ii., 530.  
 $\psi$ -**Jervine** (WRIGHT and LUFF), 1879, T., 407, 413, 419; (WRIGHT), 1879, T., 421.  
**Jet**, gases enclosed in (THOMAS), 1876, ii., 144.  
**Jordanite** from Imfeld in the Binnenthal (SIPÖCZ), 1874, 134.  
 from Nagyag (TSCHERMAK), 1874, 664.  
**Juglone**. See 4'-Hydroxy- $\alpha$ -naphthaquinone.  
**Julianite** (WEBSKY), 1873, 149.  
**Juniper-berries**, examination of (DONATH), 1873, 1051; (RITTHAUSEN), 1878, A., 240.  
**Jusquiamine**, alkaloids of (LADENBURG), 1880, A., 561.  
**Jute**, bleaching of (SINGER), 1880, A., 200.  
 fibre, chemistry of (CROSS and BEVAN), 1880, A., 666.  
 plant, composition of the fibre of, and its use as a textile material (HODGES), 1875, 199.  
 substance, reactions of, under high pressure (CROSS and BEVAN), 1882, T., 107.  
 waste, oily, spontaneous combustion of (COLEMAN), 1878, A., 258.

## K.

- Kainite** from Kalusz (Galicia) (SCHWARZ), 1876, ii., 224.  
 from Stassfurt (KRAUSE), 1876, i., 346.  
 estimation of potassium sulphate in (PRECHT), 1882, A., 96.  
 See also Potassium sulphate, and under Agricultural Chemistry.  
**Kaiser oil** (BUCHNER), 1878, A., 623.

**Kaluszite**, identity of, with syngenite (VRBA), 1873, 852.

**Kaolinite** (*kaolin*) (BISCHOF), 1875, 433; (HOFFMANN), 1881, A., 545. from Thuringia (HEROLD), 1876, i., 530; (SCHMID), 1877, ii., 119. washing of (SCHWARZ), 1876, i., 789.

sodio-aluminium silicates formed by the action of sodium carbonate on (SILBER), 1881, A., 684.

used in the manufacture of bricks, composition of (FISCHER), 1878, A., 691, 761.

pyrometric examination of two artificial, compared with natural kaolin (BISCHOF), 1876, i., 751.

**Kapok-cake**, composition, and nutritive and manurial value of the (REINDERS), 1877, i., 105.

**"Karabuja"** (FRENZEL), 1880, A., 616.

**Karaka tree**, isolation of the bitter substance of the nut of (SKEY), 1873, 933.

**Karakin** (SKEY), 1873, 933.

**Karyinite** (STÖGREN), 1878, A., 942.

**Kellin** (MUSTAPHA), 1879, A., 1041.

**Kelp**, extraction of bromine from (GALLOWAY), 1878, A., 1017.

extraction of iodine from (STANFORD), 1878, A., 169; (GALLOWAY), 1878, A., 1017; (SCHOTT), 1879, A., 1051; (ALLARY and PELLIEUX), 1881, A., 207, 319; (THIERCELIN), 1881, A., 318; (ALLARY), 1881, A., 319.

**Kenngottite** (SIPÖCZ), 1878, A., 17.

**Kentrolite**, a new mineral species from Chili (VOM RATH and DAMOUR), 1881, A., 554.

**Keramohalite** (*alunogen*) (HILGER), 1878, A., 203; (HOFFMANN), 1881, A., 546; (LIVERSIDGE), 1881, A., 991.

**Kermes**, production of (TERREIL), 1874, 339; (WEPPEN), 1875, 735.

**Kermesite** (*red antimony*) (TECLU), 1880, A., 612.

**Kerolite**. See Cerolite.

**Kerosene**. See Petroleum.

**Kerrite** (GENTH), 1874, 550.

**Kersantyte** from Langenschwalbach (ZICKENDRATH), 1876, i., 196.

**Ketines** (MEYER and TREADWELL), 1881, A., 796; (TREADWELL), 1881, A., 895; (MEYER), 1882, A., 940; (TREADWELL and STEIGER), 1882, A., 941.

**Ketole**. See Indole.

**Ketonedicarboxylic acid** from ethylic nitrosoacetoacetate and its salts (WLEÜGEL), 1882, A., 949.

**Ketones**, preparation of (STAEDEL), 1873, 753; 1878, A., 671; (ENGLER and LEIST), 1873, 901; (PAWLOFF), 1876, i., 895; 1877, ii., 732; (DE BECH), 1879, A., 529.

retort for preparing, by the distillation of calcium salts (TER MEER), 1876, ii., 395.

synthesis of (GRUCAREVIČ and MERZ), 1873, 635, 1233; 1874, 263; (KOLLARITS and MERZ), 1873, 1035; (FRIEDEL), 1877, ii., 864.

synthesis of aromatic, by means of carbonyl chloride (MICHLE), 1876, ii., 298; (MICHLE and GRADMANN), 1877, ii., 334.

synthesis of, from dimethylaniline (MICHLE and DUPERTUIS), 1877, ii., 333.

atomic volume and specific gravity of (HERMANN), 1878, A., 637.

action of ammonia and its derivatives on, in presence of dehydrating agents (ENGLER and HEINE), 1873, 1036.

condensation of, with aldehydes (CLAISEN and CLAPAREDE), 1882, A., 511.

action of hydrochloric acid on (HEYNE), 1875, 762.

condensation of higher (JACOBSEN), 1875, 259.

decomposition of (STAEDEL), 1873, 753.

decomposition of, by soda-lime (GRUCAREVIČ and MERZ), 1874, 264.

reduction of (GRAEBE), 1875, 457.

oxidation of (POPOFF), 1873, 1037; (HERCZ), 1876, i., 377; 1877, ii., 425; (GOLDSTEIN), 1881, A., 423; (WAGNER), 1882, A., 594.

bye-products in the preparation of (PAWLOFF), 1876, i., 895; 1877, ii., 732.

haloid compounds of, atomic volume of (HERMANN), 1878, A., 637.

nitro-acids derived from (CHANCEL), 1878, A., 964; 1882, A., 710.

dinitro-derivatives from (CHANCEL), 1882, A., 824.

nitroso-, reduction of, with sodium amalgam (MEYER and TREADWELL), 1881, A., 796; (TREADWELL), 1881, A., 895.

**Ketonic acids** (v. RICHTER), 1877, ii., 439.

formation of (MEYER), 1873, 496; (DOEBNER), 1881, A., 600.

synthesis of (HOFFERLICHTER) 1880, A., 35; (ROSER), 1881, A., 731.



- Ketonic acids**, action of sodium thio-sulphate on (BÖTTINGER), 1882, A., 1051.  
 conversion of, into hydrazids by sodium-amalgam (ROTTERING and ZINCKE), 1876, i., 926.  
 introduction of aromatic hydrocarbons into (BÖTTINGER), 1881, A., 814, 1035.
- Ketonic alcohols**, derivatives of (ENGLER and BETHGE), 1875, 65.
- Keuper-marls**, occurrence of coelestine in, and its influence upon the constituents of plants (STODDART), 1877, ii., 281.
- Kidneys**, formation of hippuric acid in (HOFFMANN), 1878, A., 442.  
 elimination of acids through the (BÜCHHEIM), 1876, ii., 647.
- Kidney substance**, quantitative analysis of the albuminoids of (GOTTWALT), 1881, A., 661.
- Kieselguhr**, composition of (NIEDERSTADT), 1880, A., 595.
- Kieserite** (PRECHT and WITTJEN), 1882, A., 149.  
 its properties and applications (GRÜNEBERG), 1873, 416.  
 See also Magnesium sulphate.
- Killinite** (JULIEN), 1881, A., 1006.
- Kino**, Malabar, and **kino-red** and **kinoin** (ETTI), 1879, A., 159.
- Kinzigite** (HEBENSTREET), 1878, A., 208.
- Kinzigites** of Calabria (LOVISATO), 1881, A., 519.
- "Kirschen-wasser,"** tincture of guaiacum as a test for the purity of (BOUSSINGAULT), 1875, 292.
- Kisjak**, a fuel used in the south of Russia (ČECH), 1878, A., 919.
- Kjerulfin** (BAUER), 1881, A., 366.  
 occurrence of, in Norway (v. KOBELL), 1873, 1206; (BRÖGGER and REUSCH), 1876, ii., 52.  
 composition of (RAMMELSBERG), 1881, A., 230.  
 crystallographical examination of (BRÖGGER), 1881, A., 398.
- Klipsteinite** (FISCHER), 1881, A., 990.
- Koft Gari work**, Indian, composition of (FLIGHT), 1882, T., 140.
- Kôji** (ATKINSON), 1881, A., 1059.  
 preparation of (KORSCHULT), 1879, A., 413.
- Kola nuts** (*Stereulia acuminata*), composition of (HECKEL and SCHLAGDENHAUFFEN), 1882, A., 1125.
- Koppite** from the Kaiserstuhl (KNOP), 1875, 617.
- Kornite** (FRENZEL), 1874, 447.
- Kosin** (BEDALL), 1874, 702; (FLÜCKIGER and BURI), 1875, 468.
- Koumiss** (SUTER-NAEF), 1873, 76.  
 peptonisation of albuminoids in (DOCHMANN), 1882, A., 1221.
- Krantzite**, identity of so-called "unripe amber" with (SPIRGATIS), 1873, 483.
- Kraurite**. See Dufrenite.
- Krennerite** (SCHRAUF), 1879, A., 598.  
 from Nagyag (SCHARIZER), 1882, A., 581.
- Krugite** (PRECHT), 1882, A., 149.
- Kühnite**. See Berzeliite.
- Kyanite** (*cyanite*; *disthene*) (FREMY and FEIL), 1878, A., 204; (HOFFMANN), 1881, A., 545.  
 as a transformation product of corundum (GENTH), 1874, 1068.  
 volume-constitution of (SCHRÖDER), 1874, 876.  
 crystallisation of (VOM RATH), 1880, A., 534; 1881, A., 548; (BAUER), 1880, A., 614.  
 from Central Africa (LIEBISCH), 1879, A., 24.  
 mineral resembling, in the Rhenish basalts (VOM RATH), 1873, 248.
- Kynuric acid** (*kynuric acid*) and its salts (KRETSCHY), 1880, A., 44; 1881, A., 827.
- Kynurin** (*4'-hydroxyquinoline*) and its derivatives (KRETSCHY), 1881, A., 828.

## L.

- Laboratories**, ventilation of (BING), 1882, A., 1332.
- Laboratory apparatus** (GIBBS), 1873, 1194; (FRERICHS), 1877, ii., 838.  
 experiences on board the "Challenger" (BUCHANAN), 1878, T., 445.  
 manipulations (AUSTEN), 1877, ii., 701.  
 vessels, cleansing of (WALZ), 1878, 1276.
- Labradorite** from Dürrmosbach (HAUSHOFFER), 1881, A., 386.  
 of the hyperite of Aveyron (PISANI), 1878, A., 946.  
 of Vöröspatak, form and transformation of (TSCHERMAK), 1875, 743.  
 hydrated (HEDDLE), 1882, A., 289.  
 composition of (COSSA), 1881, A., 537.  
 See also Felspar.
- Labradorite-porphyrries** of Westphalia (ANGELBIS), 1881, A., 587.
- Lac black**, for metal and wood (ANON.), 1879, A., 684.
- Lactarius deliciosus**, examination of (v. HARTSEN), 1874, 705.

- Lactic acid** (*inactive ethylenelactic acid*;  *$\alpha$ -hydroxypropionic acid*) (WISLICENUS), 1876, i., 561.  
 from willow-bark (BOTT), 1877, ii., 905.  
 in the urine in disease (NENCKI and SIEBER), 1882, A., 1309.  
 preparation of (NENCKI and SIEBER), 1882, A., 378; (KILIANI), 1882, A., 715, 827.  
 etherification of (MENSCHUTKIN), 1882, A., 486.  
 action of bromine on (KLIMENKO), 1876, i., 900; ii., 396.  
 action of phosphorus *pent*-sulphide on (BÖTTINGER), 1879, A., 46.  
 influence of, in fodder (SIEDAMGROTZKY and HOFMEISTER), 1880, A., 905.  
 prevention of the occurrence of, in beer (JÄCKEL-HANDWERK), 1881, A., 857.  
 mannitol as bye-product in the formation of, from cane-sugar (DRAGENDORFF), 1880, A., 100.  
 action of, on animals (HEITZMANN), 1874, 593.  
 can inorganic constituents be withdrawn from the bones by the introduction of, into the blood? (HEISS), 1877, i., 216.  
 supersaturated solutions of metallic salts of (DE COPPET), 1873, 165.  
 calcium salt of, fermentation of (FITZ), 1879, A., 664; 1880, A., 819.  
 estimation of, in milk (MARCHAND), 1879, A., 749; (MUSSO), 1881, A., 944.
- Lactic acid,  $\alpha$ -amido- (*serin*)** (MELIKOFF), 1882, A., 38; (BAUMANN), 1882, A., 1282.  
 *$\beta$ -amido-* (ERLENMEYER), 1880, A., 713; (MELIKOFF), 1880, A., 800; 1882, A., 38.  
 *$\beta$ -bromo-* (MELIKOFF), 1880, A., 800.  
*tribromo-* (WALLACH and REINCKE), 1878, A., 403.  
 *$\beta$ -chloro-* and its salts (WERIGO and MELIKOFF), 1879, A., 521; (MELIKOFF), 1880, A., 160, 627; 1882, A., 38; (v. RICHTER), 1880, A., 32; (ERLENMEYER), 1880, A., 544; (FRANK), 1881, A., 417.  
 formation of (MELIKOFF), 1881, A., 154.  
*dichloro-* (PINNER), 1876, i., 65.  
*trichloro-*, and its salts (PINNER and BISCHOFF), 1876, i., 554.  
 *$\beta$ -iodo-*, and some of its salts (MELIKOFF), 1881, A., 712.
- Lactic acid, nitro-**, spontaneous oxidation of (HENRY), 1880, A., 237.  
 *$\alpha$ -thio-* (BÖTTINGER), 1876, ii., 413, 624; 1878, A., 33; 1879, A., 45.
- Paralactic acid** (*dextrorotatory*) (*surcolactic acid*) (KLIMENKO), 1877, ii., 882; 1881, A., 413.  
 formation of, by fermentation (MALY), 1875, 1175.  
 from inosite (VOHL), 1876, ii., 400.  
 occurrence and origin of, in the organism (SALOMON), 1879, A., 176.  
 amount of, in muscle (ASTASCHESKY), 1882, A., 539.
- $\beta$ -Lactic acid.** See Hydracrylic acid.
- Lactic ferment.** See Ferment.
- Lactic fermentation.** See Fermentation.
- Lactide** (WISLICENUS), 1873, 57; (HENRY), 1874, 978.
- Lactide-bromal.** See Ethylic *tribromopyruvate*.
- Lactobutyrometer and lactometer** (STODDART), 1875, 293; (SCHMIDT), 1880, A., 352; (CALDWELL), 1881, A., 657; (EGGER), 1882, A., 778.
- "Lactochrome"** (BLYTH), 1879, T., 532.
- Lactocyanamide** (MERTENS), 1878, A., 398.
- Lactoglucose.** See Galactose under Carbohydrates.
- Lactomaluryl, hexabromo-** (GRIMAU), 1876, i., 69.
- Lactones** (FITTIG), 1880, A., 378, 799.  
 constitution of (BREDT), 1881, A., 34; (FITTIG), 1882, A., 32.  
 boiling points of (HJELT), 1882, A., 947.  
 from *isodibromocaproic acid* (HJELT), 1882, A., 944.
- Lactonic acid.** See Galactonic acid.
- Lactophosphates** (ROTHER), 1873, 494.
- Lactoprotein** (HAMMARSTEN), 1878, A., 235.  
 estimation of, in milk (BLYTH), 1879, T., 532.
- Lactose.** See under Carbohydrates.
- "Lactosuria"** (HOFMEISTER), 1878, A., 442.
- Lactuca canadensis*, milk-juice from (FLOWERS), 1879, A., 1041.
- Lactuca sativa*, composition of (CHURCH), 1877, ii., 210.
- Lactucarium, lactucerin, lactucic acid, lactucin and lactucopierin** (FLOWERS), 1879, A., 1041.
- Lactucene**, and hydrocarbon  $C_{14}H_{22}$  from (FRANCHIMONT and WIGMAN), 1879, A., 468.

- Lacturamic acid** (URECH), 1873, 380.
- Lactylcarbamide.** See  $\alpha$ -Methylhydantoin.
- Lactylthiocarbamide** (FREYTAG), 1880, A., 312.
- Lævulinic acid.** See Levulinic acid.
- Lævulose.** See Levulose under Carbohydrates.
- Lagetta funifera**, examination of (MOELLER), 1879, A., 860.
- Lake mud as manure** (ANON.), 1881, A., 1077.
- Lake water.** See under Water.
- Lakes**, preparation of alcoholic (MORELL), 1873, 960.
- Lallemantia iberica**, seeds of (WILDT), 1879, A., 822.
- Lambs**, duration and composition of the increase in live-weight of, when fattening (HENNEBERG, KERN and WATTENBERG), 1881, A., 450.  
effect of artificial addition of phosphates to the food of (HOFFMEISTER), 1873, 1153.
- Lamp**, carbon disulphide, spectrum of Sell's (VOGEL), 1875, 603.  
carbon disulphide and nitric oxide, and its application to photography (DELACHANAL and MERMET), 1875, 294.  
electric. See under Electrochemistry.
- oil** (ANON.), 1873, 1273.  
employment of heavy mineral oils in (LISSENKO), 1878, A., 539.  
platinum-, "precautions in the construction and use of Döbereiner's (GRÜEL), 1874, 929.  
safety, improvement in the (ANON.), 1874, 400.  
spirit-, new (MOHR), 1874, 291.
- Lamp flames**, temperature regulator for (MARTENSON), 1873, 471.
- Lampadite** (*cupreous manganese*) (FRENZEL), 1874, 449.
- Lamp-black**, composition of, made from the natural hydrocarbon gas of the Ohio petroleum region (SANTOS), 1879, A., 97.  
See also Carbon.
- Lampic acid** (*etheric acid*) (LEGLER), 1881, A., 576.
- Lanarkite** (MASKELYNE and FLIGHT), 1874, 101.  
crystallographical constants of (SCHRAUF), 1877, ii., 860.  
from Leadhills (PISANI), 1873, 180.  
See also Lead sulphate.
- Land.** See under Agricultural Chemistry.
- Lantanuric acid.** See Glyoxalylcarbamide.
- Lanthanum** (FRERICHS), 1874, 1062; 1878, A., 934; (HILLEBRAND and NORTON), 1876, ii., 276.  
distribution of (COSSA), 1879, A., 695; 1881, A., 224.  
atomic weight of (MENDELÉEFF), 1873, 1004; (MARIGNAC), 1874, 26; (HILLEBRAND), 1877, i., 50; (RAMMELSBERG), 1877, i., 282; (BRAUNER), 1882, T., 75.  
specific heat of (HILLEBRAND), 1877, i., 50.
- Lanthanum compounds** (CLEVE), 1875, 337; (FRERICHS and SMITH), 1878, A., 647.
- Lanthanum salts** (MARIGNAC), 1874, 24.
- Lanthanum chlorostannate** (CLEVE), 1879, A., 601.  
oxide, heat produced by neutralisation of (THOMSEN), 1874, 430.  
ammonium nitrate and platinoclorides (MARIGNAC), 1874, 25.  
sulphate (FRERICHS), 1874, 1063.
- Lanthanum**, separation of, from didymium (FRERICHS), 1874, 1062.
- Lapachol** (*grocnhartin*; *hydroxyamyl-enecephthaquinone*; *lapachic acid*; *taigic acid*) (PATERNÖ), 1880, A., 267.  
crystalline form of (PANEBIANCO), 1880, A., 548.
- Lapis lazuli**, a crystal of (FISCHER), 1881, A., 990.  
See also Ultramarine.
- Larches**, effect of manures on the growth of (HESS; HAMPEL), 1880, A., 509.
- Lard**, coefficients of expansion of (WIGNER), 1880, A., 70.  
insoluble fatty acids in (KRETZSCHMAR), 1878, A., 345.
- Latent heat.** See under Thermochemistry.
- Laumontite** from Puy-de-Dôme (GONNARD), 1877, ii., 283.
- Lauraldehyde**, preparation of (KRAFFT), 1880, A., 866.
- Lauramide** (KRAFFT and STAUFFER), 1882, A., 1273.
- Laurel water**, artificial (RIPPING), 1877, ii., 241.
- Laurene** (DE MONTGOLFIER), 1878, A., 899.
- Lauric acid** and ketone from (KRAFFT), 1880, A., 34.
- Laurite**, artificial (SAINT-CLAIRE DEVILLE and DEBRAY), 1880, A., 222.
- Laurocerasus**, chemical nature of the essence of (FILETI), 1879, A., 719.
- Lauronitrile** (KRAFFT and STAUFFER), 1882, A., 1274.

- Laurostearin** (SCHIFF), 1874, 1079; 1875, 750.
- Laurus Camphora*, examination of the leaves of (SACC), 1882, A., 989.
- Lautite** (FRENZEL), 1882, A., 474.
- Lavas**, composition and fertilising power of (GAVAZZI), 1877, ii., 861.
- from the neighbourhood of Catania and their composition (RICCIARDI), 1881, A., 701.
- basaltic, of the Eifel (HUSSAK), 1880, A., 19.
- of the volcanoes of Ernici in the Valle del Sacco (Rome) (SPECIALE), 1880, A., 226.
- from Etna (COSSA), 1879, A., 904.
- hydrocarbons of the paraffin series found in (SILVESTRI), 1877, i., 704; 1882, A., 810.
- of Georgio (FOUQUÉ), 1881, A., 557.
- from Hawaii and other islands of the Pacific Ocean (COHEN), 1881, A., 392.
- from the Island of Niuafoou (WICHMANN), 1881, A., 701.
- Wenneberg, from the Ries (FRICKHINGER), 1875, 874.
- of the last eruption of Santorin, analysis of (FOUQUÉ), 1873, 477; 1875, 623.
- of the Kaymenae in the Gulf of Santorin, mineralogical composition of (VRBA), 1875, 873.
- of Thera (FOUQUÉ), 1876, ii., 392.
- from Vesuvius (FOUQUÉ), 1875, 241; (ROTH), 1882, A., 482; (RICCIARDI), 1882, A., 1177.
- See also Volcanic.
- Lavender**, essence of (BRUYLANTS), 1880, A., 50.
- Lavez rock** in the Upper Engadine (v. GÜMBEL), 1879, A., 25.
- Law** of Ampère and Avogadro (WURTZ), 1877, ii., 404, 569; 1878, A., 702.
- of Dulong and Petit applied to perfect gases (WILLOTTE), 1880, A., 83.
- of Dulong and Petit, apparent variability of (HIRN), 1873, 587; (SPRING), 1875, 997.
- of corresponding boiling-points (DÜHRING), 1881, A., 71.
- of Kopp, of constant differences of boiling points (WINKELMANN), 1877, ii., 822; 1881, A., 71.
- of Mariotte, deviation of gases especially hydrogen from (BUDDE), 1874, 646.
- which regulates direct additive reactions (MARKOWNIKOFF), 1876, i., 338.
- Law** of distribution (POTILIZIN), 1882, A., 456.
- of multiple proportion, proof of (KESSLER), 1879, A., 691.
- of volumes for the liquid state (KRAFFT), 1882, A., 1272.
- of volumes, Gay-Lussac's (SAINTE-CLAIRE DEVILLE), 1878, A., 264.
- of smallest volumes (MÜLLER-ERZEACH), 1882, A., 137, 1024.
- regulating volume-changes in the formation of alloys and in mixtures of liquids (KARMARSH), 1878, A., 367.
- peculiar to metallic ferrocyanides (GUYARD), 1879, A., 830.
- periodic. See Periodic law.
- Lazulite** (HOFFMANN), 1881, A., 545.
- See also Siderite.
- Lead**, occurrence of native, in Russia (v. KOKSCHAROFF), 1876, i., 525.
- presence of, in bismuth subnitrate (CHAPUIS and LIXOSSIER), 1879, A., 80.
- allotropic condition of (SCHÜTZENBERGER), 1878, A., 840.
- extraction of (ANON.), 1882, A., 346.
- its impurities and their influence on the technical use of the metal (BRIGEL), 1873, 846.
- desilverisation of (STODDART), 1877, ii., 947; (DONATH), 1881, A., 760.
- Keith's process for, and refining, by electrolysis (ANON.), 1879, A., 288, 410.
- Schnabel's process for (ANON.), 1881, A., 768.
- and purification of (ROSWAG and GEARY), 1878, A., 819.
- and refining of, by means of steam (ANON.), 1874, 1117; (ROZAN), 1876, i., 129.
- influence of impurities in (KIRCHHOFF), 1878, A., 761.
- spectrum of (LECOQ DE BOISEAU DRAN), 1874, 217.
- action of acetic acid and turpentine oil on (MERRICK), 1874, 1065, 1188.
- action of nitric acid on (ARMSTRONG and ACWORTH), 1877, ii., 84.
- solvent action of various saline solutions on (MUIR), 1877, i., 660, 690.
- action of sulphuric acid on (BAUER), 1875, 612; (MALLARD), 1875, 791.
- action of water on (CHRISTISON), 1873, 1006; (DUMAS), 1874, 232; (BOBIERRE); MARAIS, 1874, 233; (BISCHOF), 1877, i., 428; (ROCQUES), 1880, A., 766.
- action of distilled water on (PIERRE), 1874, 1064.



- Lead**, action of potable waters on (FORDOS), 1874, 872.  
 action of the waters of the Seine and the Oureq on (FORDOS), 1874, 232.  
 action of sea-water on (KAYSER), 1876, i., 683.  
 action of water and air on (FORDOS), 1874, 232; (VAN DE VYVERE), 1876, i., 342.  
 new product of the oxidation of, and some phenomena of dissociation (DEBRAY), 1878, A., 473.
- Lead alloy**, Japanese (KALISCHER), 1875, 922.  
 with antimony (DE JUSSIEU), 1879, A., 889.  
 action of hydrochloric acid on (V. DER PLANITZ), 1875, 428.  
 action of sulphuric and hydrochloric acids on (V. DER PLANITZ), 1876, i., 45.  
 with bismuth, spontaneous disintegration of (VOGEL), 1873, 603.  
 with bismuth and tin (*d'Arce's metal*), composition of (WIEDEMANN), 1878, A., 465.  
 (*Rose's metal*) expansion and rate of cooling of (WIEDEMANN), 1878, A., 465.  
 with bismuth, cadmium, and tin (*Wood's metal*), composition of (WIEDEMANN), 1878, A., 465.  
 specific gravity of (KNECHT), 1880, A., 679.  
 (*Lipowitz's metal*), expansion and rate of cooling of (WIEDEMANN), 1878, A., 465.  
 with copper, manganese, nickel and zinc, estimation of (RICHE), 1877, ii., 924; 1878, A., 750.  
 with rhodium, action of acids on (DEBRAY), 1880, A., 706.  
 with silver from Kongsberg, crystals of (BRÖGGER), 1881, A., 353.  
 with tin, determination of the melting points of (GNEHM), 1875, 728.  
 behaviour of, with vinegar (FORDOS), 1875, 108; (WEBER), 1879, A., 990.  
 used for household vessels (KNAPP), 1876, ii., 448.
- Lead salts** (DEERING), 1873, 702.  
 action of acetates on (FIELD), 1873, 575.  
 behaviour of some sparingly soluble, to ammonium acetate (FLEISCHER), 1876, i., 190.  
 decomposition of, by alkalis (DITTE), 1882, A., 805.
- Lead halogen salts**, electrical conductivity of (WIEDEMANN), 1876, i., 668.
- Lead iodine salts** (DITTE), 1882, A., 142.
- Lead arsenate**, action of nitric acid on (DUVILLIER), 1876, i., 519.  
 See also Mimetite.  
 molybdoarsenate (*achrematite*) from Mexico (MALLET), 1875, 1141.  
 arsenides (DESCAMPS), 1878, A., 705.  
 carbonate, from the bismuth lode of Meymae (CARNOT), 1874, 238.  
 crystallised, formed on objects found at Pompeii (DE LUCA), 1877, ii., 843.  
 action of sodium oxalate on (SMITH), 1877, ii., 250.  
 solubility of, in ammonium butyrate (BERTRAND), 1877, i., 283.  
 See also Cerussite.  
 basic carbonate (*white lead*) (WIGNER and HARLAND), 1877, ii., 948.  
 manufacture of (V. WEISE), 1873, 1268.  
 composition of commercial (WIGNER and HARLAND), 1877, ii., 228.  
 red colouration of (LORSCHIED), 1873, 658.  
 coloured yellow by oil (WEIL and JEAN), 1877, ii., 948.  
 chloride, electrical properties of (AYRTON), 1879, A., 427.  
 specific gravity of (ROSCOE), 1878, A., 937.  
 solubility of (FIELD), 1873, 575.  
 solubility of, in glycerol (PIESSE), 1874, 505.  
 action of chlorine on (FISHER), 1879, T., 284.  
 action of chlorine and hydrochloric acid on (DITTE), 1881, A., 788.  
 action of salts on (DITTE), 1879, A., 1009.  
 action of sulphuric acid on (DITTE), 1879, A., 1006.
- tetrachloride* (FISHER), 1879, T., 282.  
 solubility of, in glycerol (PIESSE), 1874, 505.  
 compound of, with alkaline chlorides (FISHER), 1879, T., 284.  
 chlorobromide (ILES), 1881, A., 789.  
 chromate, action of nitric acid on (DUVILLIER), 1873, 1005.  
 behaviour of, in organic combustions (RITTHAUSEN), 1882, A., 898.  
 estimation of adulterations in (WITTSTEIN), 1874, 604.  
 estimation of lead sulphate in commercial (DUVILLIER), 1873, 1056.  
 diplumbic chromate (*randyke red*), composition of (WELBORN), 1874, 1100.

**Lead iodide**, coefficients of expansion of (RODWELL), 1881, A., 495, 966.  
 iodide, action of potash on (DITTE), 1882, A., 142.  
 action of potassium carbonate on (DITTE), 1882, A., 142.  
 action of sodium sulphite and of sulphurous acid on (MICHAELIS and KOETHE), 1874, 26.  
 combination of, with alkali iodides (DITTE), 1882, A., 466.  
 method of detecting the adulteration of (ALESSANDRI and CONTI), 1877, i., 344.  
 silver iodide and, expansion coefficients of mixtures of (RODWELL), 1881, A., 495, 966; 1882, A., 570.  
 oxyiodide (JOHNSON), 1878, T., 397.  
 molybdate, from the bismuth lode of Meymac (CARNOT), 1874, 238.  
 See also Wulfenite.  
 nitrate, action of metallic lead on aqueous solutions of (V. LORENZ), 1882, A., 364.  
 oxides, preparation of (WRIGHT and LUFF), 1878, T., 527.  
 action of carbonic oxide, carbon, and hydrogen on (WRIGHT and LUFF), 1878, T., 527.  
 action of halogens on (CROSS and SUGIRA), 1878, T., 405.  
*monoxide (litharge)*, action of, on the iodides of the alkali-metals (DITTE), 1882, A., 695.  
 action of potash on (DITTE), 1882, A., 927.  
 action of heated, on organic substances (BEHR and VAN DORP), 1873, 1135.  
 action of heated, on fluorene (KÜRNER), 1876, i., 242.  
 action of, on phenol (BEHR and VAN DORP), 1874, 798.  
 compound of, with coumarin (WILLIAMSON), 1875, 855.  
*dioxide*, action of carbonic oxide, carbon, and hydrogen on (WRIGHT and LUFF), 1878, T., 531.  
 salts of (*plumbates*) (SEIDEL), 1880, A., 94.  
*triprismatic tetroxide (red lead)*, action of carbonic oxide, carbon, and hydrogen on (WRIGHT and LUFF), 1878, T., 530.  
 action of hydrochloric acid on (FISHER), 1879, T., 283.  
 analysis of (LUX), 1880, A., 585; (FLECK), 1882, A., 99.  
 See also Minium.

**Lead phosphate**, action of nitric acid on (DUVILLIER), 1876, i., 519.  
 See also Pyromorphite.  
 copper chromophosphate (PISANI), 1882, A., 283.  
 hypophosphite (RAMMELSBURG), 1873, 10.  
 copper double selenides (PISANI), 1879, A., 440.  
 sulphate, from the bismuth lode of Meymac (CARNOT), 1874, 238.  
 influence of temperature on the coefficients of refraction of (ARZUNNI), 1878, A., 189.  
 solubility of, in a solution of sodium acetate (DIBBITS), 1874, 662.  
 action of acids and salts on (DITTE), 1879, A., 1006.  
 mutual action of potassium iodide and (CAMPANI), 1877, i., 579.  
 decomposition of, by sodium chloride (MATTHEY), 1879, A., 124.  
 estimation of, without filtering, washing, and drying (POPPER), 1879, A., 481.  
 estimation of, in galena (LOEWE), 1874, 1180.  
 estimation of, in commercial lead chromate (DUVILLIER), 1873, 1056.  
 See also Anglesite and Lanarkite.  
 sulphide, crystalline (SCHNEIDER), 1875, 533.  
 action of selenium on (POTILIZIN), 1879, A., 771.  
 See also Galena.  
 tellurate (DOMEYKO), 1876, i., 349.  
 copper tellurate (GENTH), 1875, 432.  
 thioantimonide, found at Arnsberg, Westphalia (PISANI), 1877, i., 56; ii., 855.  
 copper vanadate from Laurium (PISANI), 1882, A., 472.  
**Lead organic compounds:**—  
 ferrieyanide and its compounds (SCHULER), 1879, A., 702.  
 ammonium ferrieyanide (SCHULER), 1879, A., 703.  
 potassium ferrieyanide (WYRUBOFF), 1877, ii., 869; (SCHULER), 1879, A., 702.  
 oxyeyanides (JOANNIS), 1881, A., 1116.  
 glycerides (MORAWSKI), 1881, A., 145.  
 tetrithide, and action of sulphurous anhydride on (FRANKLAND and LAWRENCE), 1879, T., 244.  
**Lead ores:**—  
 new method of assaying (MASCARZINI), 1873, 1055.  
 detection of traces of silver in (KRUTWIG), 1882, A., 774.

**Lead ores:—**

estimation of silver in (KRUTWIG), 1882, A., 1134.

poor, removal of earthy matters from, by means of an air-blast (DELESSE), 1881, A., 767.

**Lead, detection, estimation, and separation:—**

analysis of (ESCHKA), 1875, 1302; (PRIWOZNIK), 1880, A., 772.

from Raibl, analysis of (SCHWARZ), 1878, A., 188.

detection of, in potassium bromide (ANON.), 1882, A., 99.

detection of, in tin (FORDOS), 1875, 665.

detection of, in potable waters (HARVEY), 1881, A., 1173.

estimation of (FISHER), 1879, T., 285; (BISCHOF), 1879, A., 402; (DIEHL), 1880, A., 752; (ROUX), 1881, A., 849; 1882, A., 99; (CASAMAJOR), 1882, A., 776.

estimation of small quantities of copper and (MUIR), 1876, i., 751.

estimation of, by chromic acid (HINMAN), 1878, A., 607.

estimation of, by potassium dichromate (PELLET), 1877, ii., 227.

estimation of, by potassium permanganate (V. JÜFTNER), 1882, A., 897.

estimation of, as iodate (CAMERON), 1878, A., 1010; 1879, A., 484.

estimation of, as peroxide (MAY), 1874, 1100.

estimation of, in minerals by electrolysis (PARODI and MASCAZZINI), 1877, ii., 804.

estimation of, in minium (BLUNT), 1875, 1291.

estimation of, in ores (LOEWE), 1874, 188.

estimation of, in tin (ROUX), 1881, A., 849; 1882, A., 99.

manganese, copper, zinc, nickel and, and their alloys, estimation of (RICHE), 1877, ii., 924; 1878, A., 750.

**Lead-bath** for Victor Meyer's density apparatus (SMITH), 1880, T., 491.

**Lead chamber.** See Sulphuric acid under Sulphur.

**Lead fume** (FRENCH), 1880, A., 146.

**Lead-furnaces**, Freiberg (ANON.), 1881, A., 208.

**Lead-pipes** (THOMSON), 1882, A., 668.

action of cement on (HAMBERGER), 1882, A., 1335.

action of water on (BELGRAND), 1874, 231; (REICHARDT), 1880, A., 198.

**Lead plates**, action of water on (MARAIS), 1874, 233.

**Lead poisoning** (CHAMPILLON), 1874, 400; (SOKOLOFF), 1878, A., 92.

**Leadhillite** (*macite*) (BERTRAND), 1873, 481; (LASPEYRES), 1873, 1112.

composition of (LASPEYRES), 1873, 41; 1877, ii., 413; (HINTZE), 1875, 546.

from Matlock (BERTRAND), 1878, A., 382.

from Sardinia (BERTRAND), 1873, 481.

**Leather**, preparation of (EITNER), 1881, A., 859.

destruction of, by gas (CHURCH), 1877, ii., 949; (NICHOLS), 1880, A., 836.

a forgotten colour for glazed (ANON.), 1876, ii., 236.

**Leather dressing**, use of alkali sulphides in (GELIS), 1877, ii., 243.

use of phenol in (BAUDER), 1873, 206.

**Leather meal**, agricultural value of (PETERMANN), 1882, A., 331.

**Leaves.** See under Agricultural Chemistry.

*Lecanora atra*, atrophic acid from (PATERNÒ and OGLIALORO-TODARO), 1877, ii., 786; (PATERNÒ), 1882, A., 1083.

**Lecithin** (*protagon*) (GOBLEY), 1874, 908; 1875, 92; (GAMGEE and BLANKENHORN), 1879, A., 950; (GAMGEE), 1881, A., 1047.

Liebreich's, existence of, in the brain (GAMGEE and BLANKENHORN), 1881, A., 1047.

in the organism (DASTRE and MORAT), 1875, 280.

in beer-yeast (HOPPE-SEYLER), 1879, A., 811; (LOEW), 1880, A., 816.

digestibility of (BOKAY), 1879, A., 814.

detection of (LOEW), 1879, A., 835.

**Leclanché's battery.** See Cells under Electrochemistry.

**Lecture experiments** (MERZ and WEITH), 1874, 334; 1881, A., 18; (TOLLENS), 1877, i., 270; (REMSEN), 1878, A., 370; (V. THAN), 1880, A., 212; (ROSENFELD), 1880, A., 846; 1882, A., 137, 690; (ANON.), 1880, A., 924; (HAASS), 1881, A., 133; (MEYER), 1882, A., 689.

heat of solution of hydrogen chloride in water (CHRISTOMANOS), 1878, A., 7.

on evaporation (BRUGNATELLI), 1878, A., 634.

- Lecture experiments**, action of water on bismuthous iodide (MUIR), 1882, T., 4.  
 use of Hempel's lamp for illustrating silver assay (BRONNER), 1879, A., 402.
- Lecture-illustration** of chemical curves (MILLS), 1880, T., 453.
- Ledum palustre**, camphor of (TRAPP), 1875, 1037.
- Lees**. See Wine lees.
- Legumin**, specific gravity of (DITTMAR), 1873, 283.  
 action of barium hydroxide on (BLEUNARD), 1881, A., 449.  
 action of salt solutions on (RITTHAUSEN), 1881, A., 1160.
- Leguminosæ**, cultivation and manuring of (WEIN), 1881, A., 938.  
 growth of (POTT), 1880, A., 567.
- Leidenfrost's phenomena** (BERGER), 1873, 242.
- Leidyite** (KÖNIG), 1879, A., 606.
- Lemna trisulca** (*duckweed*), composition of (MAYER), 1882, A., 422.
- Lemon juice**, changes which it undergoes (MACAGNO), 1882, A., 435.  
 volatile acids in, acidity of citrates in the neutralisation of, with chalk and valuation of (WARINGTON), 1875, 930.  
 detection of nitric acid in commercial (DORTO-SCRIBANI), 1878, A., 914.
- Lemon oil** (OPPENHEIM), 1873, 1226; (TILDEN and SHENSTONE), 1877, i., 560; (TILDEN), 1879, A., 386.  
 commercial (FLAWITZKY), 1881, A., 437.  
 discrimination between pressed and distilled (SCHACK), 1873, 1059.  
 terpene from (TILDEN and SHENSTONE), 1877, i., 560.
- Lemon peel**, examination of distilled essence of (TILDEN), 1879, A., 386.
- Lemon tree**. See under Agricultural Chemistry.
- Lens**, crystalline, composition of the (LAPTSCHINSKY), 1877, i., 222.
- Lentil vetch**, culture of (v. RODICZKY), 1880, A., 500.
- Leonhardtite** from Floitenthal, composition of (SMITH), 1878, A., 713.
- Lepiden** (*tetraphenylfurfuran*) (ZININ), 1875, 1004.  
 "isoLepiden" (ZININ), 1877, ii., 787.
- Lepidine**. See 4'-Methylquinoline.
- Lepidium sativum**, essential oil of (v. HOFMANN), 1875, 170.
- Lepidolite** (*lithia mica*) (GROTH), 1875, 542; (TSCHERMAK), 1878, A., 711; 1880, A., 533.  
 preparation of some lithium compounds from (FILSINGER), 1877, i., 441.  
 preparation of lithium, caesium and rubidium from (PETERSON), 1877, ii., 706.  
 Hauer's method of disintegrating (ŠTOLBA), 1877, ii., 356.  
 from Paris, Rozena, and Zinnwald (BERWERTH), 1879, A., 23.  
 See also Mica.
- Lepidolites** (RAMMELSBERG), 1879, T., 19; (COPPOLA), 1880, A., 224.
- Lepidomelane** (TSCHERMAK), 1878, A., 711; 1880, A., 533.  
 See also Mica.
- Lepidophæite** (WEISBACH), 1881, A., 362.
- Leptandra**, resin of (LLOYD), 1881, A., 103.
- Leptomeria acida** (*Australian currant*), acids of (RENNIE), 1881, A., 1033.
- Lettsomite** (PISANI), 1878, A., 946.
- Leucæmia**, oxidation in the tissues in (NENCKI and SIEBER), 1882, A., 1309.
- Leucaniline** (E. and O. FISCHER), 1878, A., 791.  
 synthesis of (FISCHER and GREIFF), 1880, A., 640.
- ψ-Leucaniline** (*triæmildotriphenylmethane*) (FISCHER and ZIEGLER), 1880, A., 662.  
 compound of, with benzene (FISCHER and ZIEGLER), 1880, A., 662.
- Paraleucaniline** (E. and O. FISCHER), 1879, A., 384.  
 occurrence of, in the manufacture of rosaniline (GRÆBE), 1880, A., 162.  
 from *m*-nitrodiamidotriphenylmethane (FISCHER and ZIEGLER), 1880, A., 663.  
 constitution of (ROSENSTIEL), 1880, A., 553.
- Leucanisidine**. See *tri*Amidodimethoxytriphenylmethane.
- Leucaugite**. See Augite.
- Leucaurin** (*triphenolmethane*) (DALE and SCHORLEMMER), 1873, 439; 1879, T., 150; (ZULKOWSKI), 1881, A., 900.  
 crystallography of (LEWIS), 1875, 1147.
- Leuceine** (BLEUNARD), 1881, A., 1047.
- Leuceines** (SCHÜTZENBERGER), 1876, i., 944; 1879, A., 544; (GAUTHIER and ETARD), 1882, A., 1116.
- Leucindigo**. See Indigo-white.



- Leucine** ( *$\alpha$ -amido-n-hexoic acid*) (NENCKI), 1877, ii., 596.  
 in potatoes (SCHULZE and BARBIERI), 1880, A., 342.  
 from young pumpkin plants (SCHULZE and BARBIERI), 1878, A., 857.  
 in young vetches (v. GORUP-BESANEZ), 1874, 494; (COSSA), 1876, i., 421.  
 formation of, together with asparagine during the germination of vetches (v. GORUP-BESANEZ), 1874, 912.  
 from valeraldehyde (LJUBAVIN), 1881, A., 796.  
 obtained by the action of baryta on albumin (SCHÜTZENBERGER), 1879, A., 544.  
 absence of, in the products of germination of the Graminaeae (MERCADANTE), 1877, i., 105.  
 density of (ENGEL and VILMAIN), 1876, i., 907.  
 action of benzoic chloride on (DESTREM), 1878, A., 506.  
 oxidation of (DRECHSEL), 1876, i., 701.  
 some reactions of (ENGEL), 1876, i., 943.  
 **$\psi$ -Leucine** (SCHÜTZENBERGER), 1878, A., 235.  
**Leucines** (SCHÜTZENBERGER), 1876, i., 944; 1879, A., 544; (GAUTIER and ETARD), 1882, A., 1116.  
**Leucite** (*amphigene*) (BAUMHAUER), 1878, A., 385; (WEISBACH), 1881, A., 363.  
 artificial production of (HAUTEFEUILLE), 1880, A., 449.  
 crystal-system of (VOM RATH), 1873, 1007; (HIRSCHWALD), 1880, A., 16; (FOUQUÉ and MICHEL-LÉVY), 1880, A., 448; (WEISBACH), 1881, A., 397.  
 potassio-ferrie silicate analogous to (HAUTEFEUILLE), 1881, A., 389.  
 outcasts of, from Vesuvius (VOM RATH), 1873, 146.  
**Leucitophyre** of Lake Averno (KALKOWSKY), 1879, A., 609.  
 artificial production of, identical with the crystalline lavas of Vesuvius and Somma (FOUQUÉ and MICHEL-LÉVY), 1880, A., 448.  
**Leucogallol** (STENHOUSE and GROVES), 1875, 708.  
**Leucoline**. See Quinoline.  
**Leucolinic acid** and its decompositions (DEWAR), 1881, A., 1043.  
**Leucomaines**. See Ptomaines.  
**Leucomalachite-green** (*tetramethyl-di-amidotriphenylmethane*) and its salts (DOEBNER), 1878, A., 874; (FISCHER), 1879, A., 236; 1880, A., 40; 1881, A., 588; 1882, A., 393.  
 a green dye from (ANON.), 1881, A., 483.  
**Leuconostoc mesenteroides** (VAN TIEGHEN), 1880, A., 909.  
**Leucopetrite** (DOELTER), 1881, A., 359.  
**Leucophane**, crystal-form and twin-formation of (BERTRAND), 1879, A., 422.  
**Leucophyll** (VINES), 1878, T., 379.  
**Leucopyrite** (*arsenosiderite*) (CHURCH), 1873, 102; (FISCHER), 1881, A., 991.  
**Leucorosolic acid** (*diphenoleresol-methane*) and *tetrabromo-* (GRAEVE and CARO), 1876, i., 590; (ZULKOWSKI), 1879, A., 59.  
**Leucotin** (v. JOBST and HESSE), 1877, ii., 201; 1880, A., 326.  
*di-* and *tri-bromo* (v. JOBST and HESSE), 1880, A., 326.  
**Levulan** (CLAËSSON), 1882, A., 819.  
 a new species of gum occurring in beetroot molasses (v. LIPPMANN), 1881, A., 888.  
**Levulin**. See under Carbohydrates.  
**Levulinic acid** ( *$\beta$ -acetylpropionic acid*) (v. GROTE and TOLLENS), 1874, 250, 566; 1875, 250; 1877, ii., 881; (CONRAD), 1878, A., 137; 1879, A., 453.  
 formation of, from dextrose (v. GROTE and TOLLENS), 1881, A., 410.  
 formation of, from lactose (RODEWALD and TOLLENS), 1881, A., 410.  
 preparation of (BENTE), 1875, 1005; 1877, i., 65.  
 preparation, properties and salts of (v. GROTE, KEHRER and TOLLENS), 1881, A., 409.  
 oxidation of (TOLLENS), 1879, A., 523; 1881, A., 411.  
 hydrocarbons obtained as by-products in the decomposition of, by hydriodic acid (KEHRER and TOLLENS), 1881, A., 399.  
 conversion of, into *n*-valeric acid (KEHRER and TOLLENS), 1881, A., 411.  
**Levulose**. See under Carbohydrates.  
**Leyden jars**, reduction of observations on (PERRY and AYRTON), 1881, A., 963.  
**Lherzolite**, or olivine-rock of the Ariège (Pyrenées) (BONNEF), 1878, A., 280.

- Libethenite** (SCHRAUF), 1881, A., 368.  
artificial (FRIEDEL and SARASIN), 1881, A., 367.
- Library of the Chemical Society**, donations to, 1873, 792; 1874, 1217; 1875, 1332; 1876, ii., 688; 1877, ii., 961; 1878, T., 552; 1879, T., 824; 1880, T., 843; 1881, T., 570; 1882, T., 435.
- Library bindings**, destruction of, by gas (CHURCH), 1877, ii., 949; (NICHOLS), 1880, A., 836.
- Licarene** (MORIN), 1882, A., 737.
- Lichen esculentus** (*mannu*), composition of (LATOURE), 1881, A., 931.
- Lichtenberg figures**, explanation of (REITLINGER and WACHTER), 1882, A., 448.
- Liebig's lifework** in experimental and philosophical chemistry—the Faraday Lecture—(V. HOFMANN), 1875, 1065.
- Lievrite**. See Ilvaite.
- Life**, influence of changes in barometric pressure on the phenomena of (BERT), 1873, 641, 762, 1249; (V. LIEBIG), 1875, 1273.  
conditions of, of the lower organisms (GUNNING), 1879, A., 664.  
of the Microzoa, relation of oxygen to (NENCKI), 1879, A., 953.
- Light**, electric. See under Electrochemistry.  
electrosilicic (PLANTÉ), 1877, ii., 270.  
lime-, heat spectrum of (LAMANSKY), 1873, 349.  
sodium monochromatic, use of, to distinguish the changes of colour in alkalimetry (HENRY), 1873, 935.  
stratified (NEYRENEUF), 1875, 412.  
production of, by atonic movements (HOPPE-SEYLER), 1873, 341.  
emitted by leaves (VOGEL), 1873, 647.  
electric current produced by (LAUR), 1882, A., 352.  
action of, on the electrical resistance of selenium (SALE), 1873, 998.  
and heat, dependence of the electric conductivity of selenium on (V. SIEMENS), 1877, i., 677; 1878, A., 361.  
influence of, on chemical action in animals (MOLESCHOTT), 1881, A., 833.  
importance of, for the formation of hæmoglobin (TIZZONI and FILETI), 1882, A., 751.  
influence of, on the formation of red pigment (BATALIN), 1882, A., 641.  
influence of, on beer (NEF), 1880, A., 200; (BECKH), 1882, A., 122.
- Light**, reflection of, from transparent bodies and from metals (QUINCKE), 1873, 590.  
reflection of, from the surfaces of isotropic bodies (LUNDQUIST), 1875, 39.  
reflected from potassium permanganate (WIEDEMANN), 1875, 120; (CONROY), 1879, A., 425.  
of phosphorescent uranium compounds, analysis of (BECQUEREL), 1873, 25.  
self-registering instrument for meteorological measurements of, in universally comparable measure (ROSCOE), 1874, 866.  
in its relation to plant life. See under Agricultural Chemistry.  
See also Photochemistry.
- Lightfoot black**. See Aniline black.
- Lightning conductors**, presence of lead in the platinum points of (DE LUCA), 1876, ii., 340.
- Lightning tube** (*fulgurite*) found at Elspert, Gelders (HARTING), 1875, 1165.
- Lignified tissues** (SINGER), 1882, A., 1122.
- Lignin** (BEVAN and CROSS), 1881, A., 1122.  
nature of (SINGER), 1882, A., 1123.
- Lignite** from Louisiana (HAYES), 1875, 242.  
from Russia (SCHEURER-KESTNER and MEUNIER-DOLLFUS), 1874, 239; 1875, 107.  
transformation of old timbering into, in the rubbish of the Dorothea mine, at Clausthal in the Upper Harz (HIRSCHWALD), 1874, 670.  
gases enclosed in (KOLBE and ZITOWITSCH), 1873, 43.  
coal and mineral resin, gases enclosed in, from Bovey Heathfield, Devonshire (THOMAS), 1877, ii., 146.  
chemical valuation of (WITTSTEIN), 1876, i., 759.  
composition of the ash of (SCHULZE), 1877, i., 287.  
See also Coal and Fuel.
- Lignite-coke** as a substitute for bone-black (MATTHEY), 1878, A., 828.
- Lignite tar** (BURG), 1877, i., 96.
- Lignoceric acid**, and its salts (HELL; HELL and HERMANN), 1881, A., 249.
- Lignoceric chloride** (HELL and HERMANN), 1881, A., 250.
- Lignose** (*wood-cellulose*), preparation of oxalic acid from (THORN), 1874, 297.

- Ligroin** (*benzoline*), explosion of (WEBER), 1881, A., 1181.
- Ligustrum** *Thota*, constituents of (MARTIN), 1879, A., 330.
- Lilac dye** for cotton (SAUVAGE), 1874, 1027.
- Limbachite** (FRENZEL), 1874, 446.
- Lime.** See Calcium oxide.  
chloride of. See Bleaching powder and Calcium hypochlorite.  
milk of. See Calcium hydroxide.  
phosphate of, glass made with (SIDOT), 1877, ii., 842.  
uranite. See Calco-uranite.
- Lime-juice**, acidity of (WARINGTON), 1875, 931.
- Limes**, otto of (*Citrus Limetta*) (PIESSE and WRIGHT), 1877, ii., 548.
- Limestone**, hevyatic, from Algeria (PETZ-HOLDT), 1873, 482.  
of Curaçao (STELZNER), 1878, A., 120.  
of Great Barrington, Massachusetts (DANA), 1873, 257.  
dolomitic, preparation of Portland cement from (ERDMINGER), 1874, 96.  
granular (SCHUMACHER), 1881, A., 698.  
of the Argentine Republic and their accessory minerals (STELZNER), 1874, 669.  
phosphoric, of the Island of Bonaire, West Indies (MARTIN), 1881, A., 391.  
shell, silicates of, and their importance in the formation of soils (WEISE), 1878, A., 447.  
Silurian, composition of (HIORT-BAHL), 1881, A., 698.  
separation of silica in the analysis of (ROCHOLL), 1880, A., 745.  
See also Calcium carbonate, Chalk and Marble.
- Limonene.** See under Terpenes.
- Limonin** and columbin, supposed identity of (PATERÒ and OGILIA-LORO-TODARO), 1879, A., 730.
- Limonite** (ROSTER), 1878, A., 282; (DOELTER), 1878, A., 391; (LIVERSIDGE), 1881, A., 993.  
artificial pseudomorph of (KELLER), 1882, A., 576.  
with the colour and transparency of göthite (MALLER), 1876, i., 348.  
concretions, compositions of (LIVERSIDGE), 1881, A., 993.  
See also Ferric hydroxide under Iron.
- Linaloes** (*Licart kanali*), oil of (MORIN), 1881, A., 738; 1882, A., 737.
- Linaloes wood** (MOELLER), 1880, A., 428.
- Linariate** (FRENZEL), 1876, i., 50.
- Line spectra.** See under Photochemistry.
- Linen goods**, rapid destruction of, by moistening with lime water (BIRNBAUM), 1877, i., 361.  
finishing of (ANON.), 1873, 1274.  
detection of cotton in (BÖTTGER), 1874, 1019; 1878, A., 918.
- Linnæite**, crystals of, found in the coal-beds of the Rhondda Valley, Glamorganshire (TERRILL), 1882, A., 282.
- Linseed.** See under Agricultural Chemistry.
- Linseed mucilage**, digestion of, with artificial gastric juice (FUDAKOWSKI), 1877, ii., 911.
- Linseed oil**, bleaching of (PUSCHER), 1873, 100.  
reaction of, with sulphuric acid (CROSS and BEVAN), 1882, T., 108.  
adulterated (MASON), 1881, A., 473.
- Lintonite** and other forms of thomsonite (PECKHAM and HALL), 1880, A., 535.
- Liquefaction** and cold produced by the mutual action of solids (WALTON), 1882, A., 450.
- Liqueurs**, colouring matter for (ANON.), 1876, ii., 236.  
testing of (ANON.), 1882, A., 561.
- Liquid state**, limit of (HANNAY), 1881, A., 971; 1882, A., 136.
- Liquid and gaseous states** (HANNAY), 1882, A., 688.  
physical properties of matter in the, under varied conditions of temperature and pressure (ANDREWS), 1876, ii., 159.
- Liquid** contained in an ancient glass vase (BERTHELOT), 1878, A., 268.  
inclosures found in native sulphur (SILVESTRI), 1882, A., 810.  
condensation of, at the wet surface of a solid (SCHLEIERMACHER), 1880, A., 363.  
evaporation of automatically weighed quantities of (ZAVAGLIA), 1874, 653.  
heterogeneous, distillation of (TROOST), 1879, A., 875.
- Liquids**, spectroscopic investigation of the constitution of (BURGER), 1879, A., 101.  
study of the molecular constitution of, by means of their coefficient of dilatation, specific heat, and atomic weight (PICTET), 1879, A., 875.

**Liquids**, relation between the molecular refraction of, and their chemical composition (SCHRÖDER), 1882, A., 1153.  
 volume constitution of (SCHRÖDER), 1881, A., 13, 220; 1882, A., 458; (KRAFFT), 1882, A., 1272.  
 physical properties of (THORPE), 1880, T., 141, 327.  
 absorption bands in the visible spectrum produced by certain colourless (RUSSELL and LAPRAIK), 1881, T., 168.  
 determination of the index of refraction of, by means of the microscope (SORBY), 1878, T., 487.  
 electro-optic experiments on (KERR), 1880, A., 599; 1882, A., 678.  
 free from gas, galvanic polarisation in (v. HELMHOLTZ), 1874, 644.  
 action of electricity on (NEYRENEUF), 1873, 339, 1094.  
 electrolysis of various, by means of carbon electrodes (BARTOLI and PAPASOGLI), 1882, A., 406, 850.  
 decomposition of, by the electric spark with production of the fundamental hydrocarbons (TRUCHOT), 1878, A., 210.  
 electrical conductivity of (TOLLINGER), 1878, A., 103; (KERR), 1880, A., 599; 1882, A., 678; (BOUTY), 1882, A., 912.  
 influence of temperature on (EXNER and GOLDSCHMIEDT), 1878, A., 830.  
 electrical resistance of, at high pressures (HERWIG), 1877, ii., 161.  
 specific inductive capacity of (HOPKINSON), 1881, A., 963.  
 dielectric constants of (SIŁOW), 1876, ii., 267.  
 thermoelectric properties of (GORE), 1880, A., 431; 1881, A., 963.  
 volatile, application of the mechanical theory of heat to the study of (PICTET), 1876, ii., 38; 1877, i., 162.  
 conductivity of, for heat (v. BEETZ), 1879, A., 1001.  
 apparatus for measuring the heat of vaporisation of (BERTHELOT), 1878, A., 106.  
 determination of the boiling points of (THORPE), 1880, T., 158, 371.  
 superposed, ebullition of (GERNEZ), 1878, A., 364.  
 superheated, evaporation of (GERNEZ), 1874, 1129; 1876, i., 868.  
 critical temperature of (PAWLEWSKI), 1882, A., 915.

**Liquids**, state of, at their critical temperature (HANNAY), 1882, A., 268.  
 distillation of, under the influence of static electricity (GERNEZ), 1879, A., 997.  
 specific heat of mixed (WINKELMANN), 1875, 38.  
 specific gravity of (SPRENGEL), 1873, 577; (THORPE), 1880, T., 141, 327; (SIEBOLD), 1880, A., 61; (SOMMERKORN), 1880, A., 419, 743; (DUNNINGTON), 1880, A., 743.  
 specific gravity of, at the boiling point, method of determining (SCHIFF), 1882, A., 893.  
 volume-changes in mixtures of (KARMARUSCH), 1878, A., 367.  
 mixed, volume of (BROWN), 1881, T., 202.  
 volumes of, at their boiling points, obtainable from unit-volumes of their gases (RAMSAY), 1879, T., 463.  
 specific volume of (THORPE), 1875, 731; 1876, ii., 41; 1880, T., 141, 371; (ZANDER), 1882, A., 1259.  
 vapour-pressure of mixed (DUCLAUX), 1878, A., 549; (KONOWALOFF), 1881, A., 1093; 1882, A., 136.  
 influence of the quantity of gas dissolved in, on the surface tension of the latter (v. WROBLEWSKI), 1882, A., 1259.  
 of feeble surface-tension, supposed action of, on liquids of strong surface-tension (GERNEZ), 1873, 722.  
 diffusion of (STEFAN), 1880, A., 364.  
 electrolytic diffusion of (GORE), 1881, A., 963; 1882, A., 565.  
 electromotive force produced by the flow of, through tubes (EDLUND), 1879, A., 998.  
 application of photometry to the study of diffusion phenomena in (v. WROBLEWSKI), 1881, A., 956.  
 motion produced by the diffusion of (SAINTE-CLAIRE DEVILLE), 1880, A., 293.  
 influence of temperature on the efflux-coefficient of, through capillary tubes (GREROUT), 1875, 329.  
 capillary angle and the spreading out of, on solids (QUINCKE), 1878, A., 195.  
 behaviour of charcoal with certain (MEISENS), 1874, 120.  
 expansion of (WIEBE), 1879, A., 1002; 1880, A., 88, 784.



- Liquids**, expansion of, by absorption of gases (MACKENZIE and NICHOLS), 1878, A., 366.  
determination of the thermal expansion of (THORPE), 1880, T., 161, 366.  
specific viscosity of (PŘIBRAM and HANDL), 1882, A., 272.  
compressibility of (AMAGAT), 1877, ii., 833.  
colorimeter for determining the colour intensity of (GÜNSBERG), 1878, A., 914.  
alimentary and medicinal, action of, on vessels of tin-lead alloy (FORDOS), 1875, 108.  
corrosive, and gases, valve for (RIDOUT), 1874, 538.  
putrefying, chemical composition of bacteria in (NESCOI and SCHAFER), 1880, A., 176.  
vegetable, sterilisation of (MIQUEL and BENOIST), 1881, A., 835.  
coloured, spectral analysis of (STEIN), 1875, 412.  
analysis of, by means of platinum (KOPFER), 1876, i., 662; 1877, i., 228.  
separation of mixed (DUCLAUX), 1876, i., 336; 1877, i., 34.  
See also Solutions.
- Liquidambar styraciflua*, balsam of (HARRISON), 1876, i., 611.
- Liquor aluminii acetici*, preparation of (POLECK; VULPIUS), 1882, A., 943.
- Liquorice root**, composition of (SESTINI), 1878, A., 740; 1879, A., 727.
- Liquors**, fermented, table of the points of congelation of various (RAOULT), 1880, A., 524.
- Litharge**. See Lead monoxide.
- Lithia**. See Lithium oxide.
- Lithia mica**. See Lepidolite.
- Lithia-psilomelane**, and on the chemical constitution of the psilomelanes (LAPPEYRE), 1876, i., 684.
- Lithiophilite** (BRUSH and DANA), 1879, A., 891; 1881, A., 530.  
composition of (PENFIELD), 1879, A., 695.
- Lithiophorite** (*cacochlor*) (FRENZEL), 1873, 149; (WEINBACH), 1879, A., 901; 1881, A., 363.
- Lithium** in sedimentary rocks (HILGER), 1875, 734.  
in rocks, sea-water, mineral waters, and saline deposits (DIEULAFAIT), 1880, A., 17.  
existence of, in notable quantities in the Dead Sea (DIEULAFAIT), 1882, A., 1037.
- Lithium** in the earths and water of the Solfatara at Puzzioli (DE LUCA), 1879, A., 33.  
preparation of (SCHNITZLER), 1874, 961.  
preparation of, from lepidolite (PETERSON), 1877, ii., 706.  
spectrum of (LECOQ DE BOISBAUDRAN), 1874, 217; (LIVEING and DEWAR), 1881, A., 957; 1882, A., 254.  
flame, relation of, to phosphorescent bodies (BÖTTGER), 1874, 643.  
intestinal concretion containing (DELACHANAL and MERMET), 1875, 96.
- Lithium carbonate** and some compounds of lithium, preparation of, from lepidolite (FILSINGER), 1877, i., 441.  
chloride, heat of formation and of solution of (THOMSEN), 1876, i., 29.  
combinations of, with alcohols (SIMON), 1880, A., 310.  
chromate and dichromate (SCHULERUD), 1879, A., 298.  
fluoride, specific gravity of (CLARKE), 1877, ii., 839.  
hydroxide, heats of decomposition, formation and neutralisation of (THOMSEN), 1876, i., 29.  
oxide (*lithia*), in the soil of Limagne, and in the mineral waters of Auvergne (TRUCHOT), 1874, 1072.  
specific gravity of (BRAUNER and WATTS), 1881, A., 220.  
phosphates (MERLING), 1880, A., 581.  
hypophosphite (RAMMELSBERG), 1873, 3.  
potassium and sodium pyrophosphates (KRAUT, NAHNSEN and CUNO), 1876, ii., 603.  
aluminium silicates (HAUTEFEUILLE), 1880, A., 447.  
silicon silicates (HAUTEFEUILLE and MARGOTTET), 1882, A., 278.  
uranate (ZIMMERMANN), 1881, A., 686.
- Lithium organic compounds**:—  
borocitrates (SCHEIBE), 1881, A., 89.  
hydroxylamine platinocyanide (SCHOLZ), 1881, A., 708.
- Lithium, estimation of**:—  
estimation of (RAMMELSBERG), 1879, A., 830.  
estimation of, by means of the spectroscope (TRUCHOT), 1874, 1072; (BALLMANN), 1876, ii., 550.

- Lithium**, estimation of, as phosphate (RAMMELSBERG), 1879, T., 18; (MERLING), 1880, A., 581.
- Lithobilic acid** (ROSTER), 1880, A., 270.
- Lithofellic acid**, and its salts (ROSTER), 1880, A., 131.
- Lithofracteur** (SCHWARZ), 1873, 304; (NIEDERSTADT), 1880, A., 596.
- Lithomarge**, pseudomorph of, after fluorspar (GEINITZ), 1877, i., 700.
- Lithospermum erythrorhizon**, red colouring matter of (KUHARA), 1879, T., 22.
- Lithospermum officinale**, composition of the ash of the fruit of (HORNBERGER, MUTSCHLER, and HAMMERBACHER), 1875, 910.
- Lithuric acid**, magnesium salt of (ROSTER), 1873, 398.
- Litmus** (MITCHELL), 1877, i., 214.  
treatment of (MOHR), 1874, 1099.  
extract of (MARTENSON), 1874, 1099.  
colouring matter of (WARTHA), 1876, i., 939.  
substitute for (WILLIAMS), 1879, A., 553.
- Litmus paper** (SQUIBB), 1873, 196.  
for alkalimetry (WARINGTON), 1875, 927.
- Litter**. See under Agricultural Chemistry.
- Liver**, chemical changes in the, and flow of blood through (FLÜGGE), 1878, A., 160.  
fermentation of the, and the formation of indole (KOUKOL-YASNOPOLSKY), 1876, ii., 211.  
action of the, on peptone (SEEGEN), 1882, A., 540.  
alkaloid occurring in the (SELM), 1876, i., 938.  
glycogenic function of the (LÜCHSINGER), 1874, 489.  
formation of glycogen in the (KÜLZ), 1876, ii., 646; 1881, A., 626; (V. MERING), 1877, i., 728; (MAYER), 1878, A., 905.  
source of glycogen in the (WEISS), 1874, 594.  
amount of glycogen in the, after death (KÜLZ), 1881, A., 628.  
influence of cold on the amount of glycogen in the (KÜLZ), 1881, A., 627.  
influence of severe bodily exercise on the amount of glycogen in the (KÜLZ), 1881, A., 626.  
influence which the tying of the *ductus choledochus* exerts upon the amount of glycogen in the (KÜLZ and FRERICHs), 1877, i., 221.
- Liver**, does injection of sodium carbonate into the portal vein cause the disappearance of glycogen from the? (KÜLZ), 1881, A., 627.  
of hibernating animals, glycogen in the (KÜLZ), 1881, A., 629.  
action of the acids of, on glycogen (SEEGEN and KRATSCHMER), 1880, A., 906.  
nature of the sugar in (SEEGEN and KRATSCHMER), 1880, A., 866.  
formation of sugar in (BERNARD), 1878, A., 82; (SEEGEN and KRATSCHMER), 1880, A., 905; 1882, A., 540.  
post-mortem formation of sugar in (BÖHM and HOFFMANN), 1882, A., 541.  
nature of the sugar found in, after *rigor mortis* (KÜLZ), 1881, A., 628.  
urea in the (HOPPE-SEYLER), 1882, A., 754.  
formation of urea in the (MUNK), 1876, i., 89; 1877, i., 730.  
of a dog, secretion of water through the (FLÜGGE), 1878, A., 161.
- Liver-ferment** (v. WITTICH), 1873, 515.  
action of acids and alkalis on (EUSTEIN and MÜLLER), 1875, 1210.
- Liver secretion** (SOKOLOFF), 1876, i., 406.
- Livingstonite** (VENABLE), 1880, A., 95.  
artificial production of (BAKER), 1881, A., 518.  
from a new Mexican locality, examination of (PAGE), 1881, A., 517.
- Loam and clay**, difference between (ANON.), 1880, A., 823.
- Lobsters' flesh**, phosphorescence of (BANCEL and HUSSON), 1879, A., 665.
- Löllingite** (FRENZEL), 1876, i., 50.
- Loess formation**, chemical composition of the (HILGER), 1875, 1240.
- Logronite**, formation of (MEUNIER), 1873, 358.
- Logwood** as an indicator in volumetric analysis (ŠTOLBA), 1876, i., 434.  
detection of, in tea (EDER), 1879, A., 854.  
detection of, in wine (GAUTIER), 1877, ii., 935; (PIZZI), 1881, A., 761.
- Logwood inks** (VIEDT), 1876, i., 821; 1877, i., 123.
- Lophin**. See Triphenylglyoxaline.
- Lotur bark**, alkaloids of (HESSE), 1879, A., 73.
- Loturidine**, and loturine (HESSE), 1879, A., 73.

**Loxopterygine** from the bark of *Quebracho Colorado* (*Loxopterygium Lorentzii*) (HESSE), 1882, A., 744.

**Lubricating oil.** See Oils.

**Lucerne** and darnel as a mixture for meadows (WITTMANN), 1881, A., 1065.

digestibility of, in the fresh state and as hay (KÜHN, HAASE and BÄSECKE), 1873, 1156.

feeding cows with (SAMEK), 1882, A., 238.

**Lucifer match** compositions (SCHWARZ), 1876, ii., 221.

**Luckite**, a new variety of iron sulphate (CARNOT), 1879, A., 901.

**Ludlamite**, a new Cornish mineral (FIELD), 1877, i., 580.

**Ludwigite** (TSCHERMAK), 1875, 546; (V. ZEPHAROVICH), 1879, A., 364.

**Lüneburgite** (VOLGER), 1874, 671.

**Luminous apparitions** or false lights (LEFORT), 1874, 814.

**Lungs**, absorption of oxygen in the, under ordinary and increased atmospheric pressure (BERT), 1873, 641, 762, 1249; (V. LIEBIG), 1875, 1273. amount of matter excreted by the, in various diseases (RENK), 1875, 902.

**Lunnite.** See Phosphorochalcite.

**Lupigenin** and **lupinin** (SCHULZE and BARBIERI), 1879, A., 468.

**Lupines.** See Agricultural Chemistry.

**Lupinine**, and its derivatives and reactions (BAUMERT), 1881, A., 831; 1882, A., 229, 873.

**Lupinus**, alkaloids of (SCHULZ and WILDT), 1880, A., 57; (SCHULZ), 1880, A., 416; (BAUMERT), 1881, A., 831; 1882, A., 229, 873.

**Lupulic acid**, **luputin**, and **lupuliretin** (ISSELIE), 1881, A., 102.

**Lutein** (MALY), 1882, A., 76.

**Luteo-chromium** and **cobalt salts.** See under Chromium and Cobalt.

**m-Luteotungstic acid.** See Tungstic acid under Tungsten.

**Lutidine.** See Dimethylpyridine.

**β-Lutidine.** See 3-Ethylpyridine.

**Lutidinic acid** (*pyridine-2:4-dicarboxylic acid*) and its salts (RAMSAY), 1879, T., 265; (BÖTTINGER), 1881, A., 612.

"**Lutorcein**," and "**lutorcinol**" (VOGT and HENNINGER), 1882, A., 729.

**Luzonite.** See Clarite.

**Ly-chô**, a new thickening-material (VACHER), 1879, A., 187.

**Lycine.** See Betaine.

**Lycotonicine** (WRIGHT and LUFF), 1878, T., 335.

**Lycopodine** (BÖDEKER), 1881, A., 1158.

**Lyidian stone** (*touchstone*), composition of (DUMAS), 1877, i., 445.

**Lymph**, action of compressed oxygen on (BERT), 1878, A., 236.

## M.

**Macleylene.** See Protopine under Alkaloids.

**Maclurin** (BENEDIKT), 1877, ii., 496. morin and moritanic acid (LOEWE), 1876, i., 395.

**Maconite** (GENTH), 1874, 550.

**Macrocarpine.** See Thaliectrine under Alkaloids.

*Macrochordion tinctorum*, micrographical and chemical researches on the fibres of (SCHLESINGER), 1874, 87.

**Madder colouring matters.** See under Colouring matters.

**Magdala-red**, spectra of (VOGEL), 1878, A., 545.

colouring matter analogous to (LECCO), 1875, 169.

**Magenta.** See under Colouring Matters.

**Magic lantern**, use of, for chemical demonstrations (VOGEL), 1874, 218; (LANDOLT), 1877, i., 683.

**Magnesia.** See Magnesium oxide.

"**Magnesia alba**" (BECKURTS), 1882, A., 13.

action of amorphous vanadic acid on (SUGUIRA and BAKER), 1879, T., 714.

**Magnesia alum** in the Philippine Islands (FRENZEL), 1878, A., 708.

**Magnesia carbonica ponderosa** (BECKURTS), 1882, A., 14.

**Magnesia-mica** and **epidote**, corrosion figures of (BAUMHAUER), 1875, 873.

**Magnesia-iron-micas** (RAMMELSBERG), 1880, A., 225; 1881, A., 533.

**Magnesia-micas** (GROTH), 1875, 543; (LUDWIG), 1875, 544; (BERWERTH), 1878, A., 478.

**Magnesia sulphureosa**, preparation of (HAGER), 1875, 1239.

"**Magnesia usta**" and "**magnesia usta levis**" (BECKURTS), 1882, A., 14.

**Magnesite**, crystallised, of the North Eastern Alps (RUMPF), 1874, 1070. of Baumgarten near Frankenstein (V. LASAULX), 1875, 1244.

See also Magnesium carbonate.

**Magnesium** in the sun (TACCHINI), 1876, ii., 588.

in zinc (WITTSTEIN), 1877, ii., 707.

reduction of, from its oxide by metallic aluminium (AUMANN), 1878, A., 933.

**Magnesium**, spectrum of (FIEVEZ), 1881, A., 955; (LIVEING and DEWAR), 1881, A., 957; 1882, A., 254, 255.  
 electrochemical deposition of (BERTRAND), 1877, i., 161.  
 crystalline form of (DES CLOIZEAUX), 1880, A., 611.  
 gases occluded in (DUMAS), 1881, A., 350.  
 rate of solution of, in different acids (KAJANDER), 1881, A., 344.  
 action of, on certain metallic salts (KERN), 1876, i., 633, 880; ii., 479.  
 action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 77.  
 action of, on some organic compounds (KERN), 1877, ii., 285.  
 behaviour of, as reducing agent with acidified solutions of ferric salts (THORPE), 1882, T., 287.  
 compounds, value of, in brick-making (BISCHOF), 1880, A., 831.  
 sulphur compounds of (REICHEL), 1876, i., 43.  
 and platinum couple (GLADSTONE and TRIBE), 1879, T., 576.  
**Magnesium salts**, spectroscopic reactions of (V. LEPEL), 1877, i., 676; (VOGEL), 1877, i., 742; ii., 269.  
 with sodium and potassium, solubility of mixtures of (PRECHT and WITTJEN), 1882, A., 1264.  
**Magnesium pyroarsenate**, estimation of arsenic as (WOOD), 1874, 1100; (MACIVOR), 1876, i., 756; (BRAUNER), 1877, ii., 222; (REICHEL), 1881, A., 467.  
 borates (DIRTE), 1874, 129.  
 borate. See also Boracite.  
 boride, preparation of (JONES and TAYLOR), 1881, T., 213.  
 carbonate, preparation of, from dolomite (ANON.), 1874, 96.  
 solubility of, in alkaline borates (WITTSTEIN), 1876, i., 189.  
 solubility of, in water charged with carbonic acid (ENGEL and VILLE), 1881, A., 1102.  
 action of, on calcium sulphate in presence of common salt (FLEISCHER), 1873, 475.  
 free, mixed, and combined, alkaline reaction of (PICHARD), 1879, A., 298.  
 comparative examination of samples of (OTTO and GAEBLER), 1881, A., 208.  
 See also Magnesite.  
 calcium carbonate. See Dolomite.

**Magnesium chloride**, heat of formation and of solution of (THOMSEN), 1876, i., 29.  
 action of, on calcium sulphide (STINGL and MORAWSKI), 1879, A., 1012.  
 decomposition of (KRAUSE), 1875, 1239.  
 compounds of, with alcohols (SIMON), 1880, A., 310.  
 anhydrous, synthesis by means of (MAZZARA), 1882, A., 838.  
 hydrated (PFEIFFER), 1878, A., 277.  
 See also Bischofite.  
 zinc chloride (WARNER), 1874, 24.  
 oxychlorides (KRAUSE), 1873, 136.  
 and heats of formation of (ANDRÉ), 1882, A., 696.  
 fluoride (COSSA), 1877, ii., 707.  
 hydroxide, heats of decomposition, formation and neutralisation of (THOMSEN), 1876, i., 29.  
 action of carbon disulphide on (WALKER), 1874, 1135.  
 See also Brucite.  
 nitride (MALLER), 1878, A., 934.  
 oxide (*magnesia*), production of (ANON.), 1881, A., 1180.  
 manufacture of (LEMOINE), 1874, 727.  
 industry (SCHLÆSING), 1881, A., 1087, 1180.  
 preparation of, for purifying potable waters (BOHLIG), 1878, A., 350.  
 action of sulphurous anhydride on (BINNBAUM and WITTICH), 1880, A., 606.  
 use of tartaric acid in solutions of (LÉGER), 1874, 97.  
 as an antidote for arsenious acid (DE CLERMONT and FROMMEL), 1879, A., 77.  
 estimation of. See Magnesium, estimation of.  
 See also Periclase.  
 phosphate, molecular combination of, with nitrogen peroxide (LUCK), 1875, 238.  
 See also Wagnerite.  
 hypophosphite (RAMMELSBERG), 1873, 9.  
 phosphates and borophosphates in the guano deposit of Mejillones (DOMEYKO), 1880, A., 446.  
 calcium borophosphate, composition of (DOMEYKO), 1880, A., 447.  
 ammonium phosphate (MILLOT and MAQUENNE), 1875, 1160.  
 phosphide (EMMERLING), 1879, A., 503.



**Magnesium platinochloride**, solubility of, in alcohol (PRECHT), 1880, A., 578.

selenite (HILGER), 1875, 533.

silicate, alkaline reaction of (PICARD), 1879, A., 298.

aluminium silicate accompanying corundum (LEEDS), 1874, 29.

silicate. See also Enstatite, Humite, Meerschau, Serpentine and Talc.

sulphate, growth of crystals of, in presence of another salt (v. FOULON), 1882, A., 574.

natural crystals of, of large size (DE ROUVILLE), 1879, A., 358.

anhydrous and hydrated, specific gravity of (THORPE and WATTS), 1880, T., 106.

(*bitter salt*), estimation of Glauber's salt in (ANTHON), 1876, ii., 326.

cobaltiferous (NIES), 1873, 1114.

use of, in dyeing (ANON.), 1874, 500.

See also Epsomite and Kieserite.

ammonium sulphate, formation of, in gas purifying (GLASENAPP), 1878, A., 536.

cobalt sulphate (NIES), 1873, 1114.

copper, iron and zinc double sulphates, examination of, by the time method (HANNAY), 1879, T., 457.

potassium sulphate (ANON.), 1881, A., 854.

sulphide (REICHEL), 1876, i., 43.

heat of formation of (SABATIER), 1880, A., 523.

sulphite (ROTHER), 1875, 423; (HAGER), 1875, 1239.

vanadates (SQUIRA and BAKER), 1879, T., 713.

#### **Magnesium organic compounds:—**

borocitrates (SCHEIBE), 1881, A., 89.

platinocyanide, dichroic fluorescence of (LOMMEL), 1880, A., 598.

potassium platinocyanide (RICHARD and BERTAND), 1881, A., 240.

#### **Magnesium. detection, estimation and separation:—**

precipitation of (FRESENIUS), 1873, 408, 944.

spectroscopical reaction for (v. LEPEL), 1877, ii., 676; (VOGEL), 1877, i., 742; ii., 269.

vegetable colouring matters as tests for (v. LEPEL), 1881, A., 62.

testing for carbonic acid (CALMBERG), 1874, 100, 711.

estimation of (GIBBS), 1874, 92; (ŠTOLBA), 1877, ii., 355; (FLEURY), 1878, A., 91; (CLASSEN), 1879, A., 969; (PRECHT), 1879, A., 1053.

#### **Magnesium, estimation and separation:—**

lime and phosphoric acid, quick method of estimating (VILLE), 1873, 294; 1875, 285.

estimation of, in urine (KRAUS), 1882, A., 775.

separation of, from the alkalis (CLASSEN), 1879, A., 969.

separation of, from calcium (SONSTADT), 1874, 915.

separation of, from calcium, iron, and alkalis (HAGER), 1882, A., 97.

**Magnetic compounds of the formula**  $R'O.Fe_2O_3$  (LIST), 1879, A., 13.

**Magnetic iron ore.** See Magnetite.

**Magnetic iron oxide.** See Ferroso-ferric oxide under Iron.

**Magnetic media**, laws of electric and magnetic forces in, and their relation to the theory of light (STEFAN), 1875, 995.

**Magnetic properties** of the elements, and Mendeleeff's periodic law (CARNELLEY), 1880, A., 206.

**Magnetic pyrites.** See Pyrrhotite.

**Magnetic rotation.** See under Photochemistry.

**Magnetisation**, heat developed by (PILLEUX), 1882, A., 1019.

**Magnetism**, new source of (TOMMASI), 1875, 605.

specific, of ozone (BECQUEREL), 1881, A., 340.

**Magnetite** (*magnetic iron ore*) (PETERSEN), 1873, 735; (FRENZEL), 1876, i., 52; 1880, A., 615; (ROSTER), 1878, A., 281; (SMITH), 1880, A., 95; (LIVERSIDGE), 1881, A., 994.

in dolerite, from Ovivak (SMITH), 1879, A., 894.

from Mulatto (DOELTER), 1878, A., 391; (v. ZEPHAROVICH), 1879, A., 23.

from Nova Scotia (HOW), 1876, ii., 55.

comparison of terrestrial, with the product of oxidation of meteoric iron (MEUNIER), 1874, 35.

See also Ferrosoferric oxide under Iron.

**Magnets**, action of, on rarefied gases enclosed in capillary tubes, and traversed by induction currents (CHAUTARD), 1875, 726.

**Magnochromite** and grochauite (WEBBKY), 1874, 666.

**Mahogany**, astringent principle of (LATOUR and CAZENEUVE), 1876, i., 86.

**Mairogallol** (STENHOUSE and GROVES), 1875, 706.

- Mairogallol**, crystallographic characters of (LEWIS), 1875, 711.
- Maize**, use of, in the preparation of starch, sugar, spirit, and beer (ANON.), 1881, A., 330.  
method of freeing, from fat before using it for the manufacture of spirit (DE LEEUW), 1882, A., 348.  
See also Agricultural Chemistry.
- Maize-bread**, alkaloid found in mildewed (BRUGNATELLI and ZENONI), 1877, i., 323.
- Malachite** and zigneline, contemporaneous formation of, on some old Roman coins (BALLAND), 1876, i., 349.  
conversion of, into azurite (WIBEL), 1873, 1111.  
pseudomorph of, after cuprite (GEINITZ), 1877, i., 697.
- Malachite green**. See under Colouring matters.
- Maleic acid** (FITTIG), 1876, i., 893; (FITTIG and PETRI), 1879, A., 372.  
from *α*-dibromopropionic acid (TANATAR), 1880, A., 374.  
from dichloroacetic acid (TANATAR), 1880, A., 35.  
conversion of fumaric acid into (PICTET), 1882, A., 389.  
transformation of succinic acid into (BOURGOIN), 1873, 1127.  
formula of (HÜBNER), 1881, A., 254.  
etherification of (MENSCHUTKIN), 1882, A., 383.  
behaviour of, with fuming hydrobromic acid (FITTIG), 1877, ii., 738.  
relation of fumaric acid to (FITTIG), 1877, ii., 430.  
action of ethylic iodide on the silver salt of (ANSCHÜTZ), 1879, A., 223.  
halogen derivatives of (OSSIPOFF), 1881, A., 416.
- Maleic acid**, amido- (CLAUS and VOELLER), 1881, A., 254.  
bromo- (PETRI), 1879, A., 373; (v. BANDROWSKI), 1879, A., 524.  
*isobromo*-. See Bromofumaric acid.
- Maleic anhydride** (PERKIN), 1881, T., 559; 1882, T., 269.  
bromo- (ANSCHÜTZ), 1878, A., 136.
- Malic acid**, presence of, in *Chelidonium majus* (HAITINGER), 1882, A., 82.  
from *Leptomeria acida* (Australian currant) (RENNIE), 1881, A., 1033.  
in the juice of unripe mulberries (WRIGHT and PATTERSON), 1878, T., 78.  
separation and purification of (v. HARTSEN), 1876, i., 375.
- Malic acid**, rotatory powers of (SCHNEIDER) 1881, A., 892.  
rotatory power, at different temperatures (THOMSEN), 1882, A., 911.  
inversion of the optical rotation of (SCHNEIDER), 1880, A., 629.  
influence of sulphuric, and of acetic acids on the specific rotatory power of (SCHNEIDER), 1881, A., 893.  
action of sulphuric acid on (WEITH), 1878, A., 138.  
acetic derivatives of (ANSCHÜTZ), 1882, A., 830.  
salts of, rotatory power of, at different temperatures (SCHNEIDER), 1881, A., 892; (THOMSEN), 1882, A., 911.  
calcium salt of, fermentation of (FITZ), 1879, A., 664.  
silver salt of, action of iodine on (BIRNBAUM and GAIER), 1880, A., 801.  
chromic acid as a test for (PAPASOGLI and POLI), 1877, ii., 807.
- d*-**Malic acid**, a new (BREMER), 1875, 1252.
- Malic acids**, active (BREMER), 1876, ii., 71.
- i*-**Malic acid** (BREMER), 1880, A., 462.  
from *α*-dibromopropionic acid (TANATAR), 1880, A., 374.  
and fumaric acid, production of, from glyceric acid (WERIGO and TANATAR), 1875, 357.  
from fumaric acid (PICTET), 1882, A., 389.  
artificial, from fumaric acid, and its salts (LOIDL), 1878, A., 784.
- iso*-**Malic acid** and its salts (SCHMOEGER), 1876, ii., 507; 1879, A., 618; 1882, A., 40.
- Mallardite**, a new natural manganese sulphate (CARNOT), 1879, A., 901.  
See also Manganese sulphate.
- Malobiuric acid** (NENCKI), 1873, 283.
- Malonamide**, amido- (CONRAD and GUTHZEIT), 1882, A., 947.  
chloro- (CONRAD and BISCHOFF), 1882, A., 39.
- Malonic acid** (VAN'T HOFF), 1875, 357; (PINNER and BISCHOFF), 1876, i., 554; (JACKSON and HILL), 1878, A., 402.  
occurrence of, in the manufacture of beet-sugar (v. LIPPMANX), 1881, A., 800.  
production of, from chloroacrylic ether (PINNER), 1876, i., 64.

- Malonic acid**, preparation of (FRANCHIMONT), 1874, 568; 1875, 355; (CONRAD), 1879, A., 707; (GRIMAU and TCHERNIAK), 1879, A., 782; (V. MILLER), 1879, A., 917; (BOURGOIN), 1880, A., 801.  
 electrolysis of (BOURGOIN), 1880, A., 462.  
 reactions of (VAN'T HOFF), 1875, 357.  
 action of bromine on (PETRIEFF), 1875, 1176; (BOURGOIN), 1881, A., 155.  
 synopsis of the polybasic fatty acids obtained from, by Conrad's method (BISCHOFF), 1882, A., 1187.  
 potassium salt of, electrolysis of (V. MILLER), 1879, A., 917.  
 derivatives of (OSTERLAND), 1875, 142; (CONRAD), 1879, A., 707.
- Malonic acid**, bromo- (PINNER), 1876, i., 65; (PETRIEFF), 1878, A., 490.  
*di*-bromo- (PETRIEFF), 1874, 787.  
 chloro-, and its derivatives (CONRAD and BISCHOFF), 1882, A., 39; (CONRAD and GUTHZEIT), 1882, A., 947.  
 nitroso- (CONRAD and BISCHOFF), 1880, A., 629.
- Malonylurea**. See Barbituric acid.
- Malonyluric acid**, cyano- (NENCKI), 1873, 282.
- Malt**, organic constituents of (KÜHNEMANN), 1877, i., 224.  
 influence of temperature on the composition and amount of extract obtained from (ANON.), 1881, A., 951.  
 nutritive value of (KELLNER), 1879, A., 1050.  
 influence of, on the quality and keeping properties of beer (LINTNER), 1881, A., 1090.  
 substitutes for, in brewing (HANAMANN), 1876, i., 807.  
 undried, application of, in the preparation of yeast (KRIEGER), 1880, A., 200.  
 testing of (SCHULTZE), 1879, A., 569; 1880, A., 71.  
 examination of (LIPPS), 1880, A., 929.  
 estimation of the extractive in, by the so-called method of two filtrates (WEISS), 1874, 1019.  
 See also Barley and Brewing.
- Malt combings** as a source of yeast (MARQUARDT), 1880, A., 518.  
 adulteration of (RICHTER), 1880, A., 777.
- Malt extract** in beer mash (SCHULTZE), 1880, A., 776.
- Malt extract**, nitrogenous constituents of (VOGEL), 1876, i., 943.  
 action of heat on (BROWN and HERON), 1879, T., 606.  
 action of, on cane-sugar and on maltose (BROWN and HERON), 1879, T., 609.  
 action of, on starch (O'SULLIVAN), 1876, ii., 125; (BROWN and HERON), 1879, T., 621.  
 action of, on the transformed products of starch (O'SULLIVAN), 1879, T., 778.  
 action of, on starch-paste (BROWN and HERON), 1879, T., 626.  
 tests for (HAGER), 1877, ii., 373.
- Malt-grains**, composition of (HILGER), 1879, A., 761; (MARKL), 1880, A., 148; (ANON.), 1880, A., 833.
- Malt liquors**, constitution of, and their influence upon digestion and nutrition (COLEMAN), 1878, A., 905.  
 influence of, on digestion (EMKEN), 1881, A., 752.  
 estimation of sugar in, by the ammoniacal copper test (STEINER), 1879, A., 1066.
- Maltodextrin** (HERZFELD), 1880, A., 311, 866; 1881, A., 1024.
- Maltose**. See under Carbohydrates.
- Malyi**, relation of oxytetric acid and its homologues to (DEMARÇAY), 1879, A., 459.
- Malyureic acid** (GRIMAU), 1876, i., 69; (ANON.), 1878, A., 138.  
 constitution and oxidation of (GRIMAU), 1875, 752.
- Malyureide** (GUARESCHI), 1878, A., 138.
- Malyureides**, conversion of, into alloxanates (GRIMAU), 1877, ii., 741.
- Mammalia**, regulation of animal temperature in the (PFLÜGER), 1876, ii., 647.  
 influence of temperature on the metamorphosis of tissue in (PFLÜGER), 1876, ii., 106.
- Mammalian fœtus**, respiration of the (ZUNTZ), 1877, ii., 502.
- Man** during sleep, consumption of oxygen in (V. VOIT), 1879, A., 75.  
 pancreatic secretion of (HERTER), 1882, A., 753.
- Mandelic acid** (*α*-hydroxyphenylacetic acid; phenylglycollic acid) (BREUER and ZINCKE), 1880, A., 645.  
 preparation of (MÜLLER), 1873, 1038.  
 preparation of, from benzaldehyde (SPIEGEL), 1881, A., 277.

**Mandelic acid** ( *$\alpha$ -hydroxyphenylacetic acid*; *phenylglycolic acid*), amide of (TOMMASI), 1874, 624; (TIEMANN and FRIEDLÄNDER), 1882, A., 56.

*d*-**Mandelic acid**, preparation of, from the optically inactive acid (LEWKOWITSCH), 1882, A., 1076.

**Manganese**, occurrence of, in Nordmark (SJÖGREN), 1880, A., 15; 1881, A., 697.

presence of, on the surface of rocks (BOUSSINGAULT), 1882, A., 1270.

thermochemical researches on (THOMSEN), 1876, i., 672.

volatility of (JORDAN), 1878, A., 772.

colour properties and relations of (BAYLEY), 1880, T., 828; 1881, T., 363.

solution of gases in (TROOST and HAUTEFEUILLE), 1877, i., 51.

action of sodium carbonate on (CHAPMAN), 1877, i., 489.

a new reaction of (HANNAY), 1878, T., 269.

as a substitute for nickel in German silver (ANON.), 1873, 1171.

influence of, on the strength of iron (ANON.), 1882, A., 781.

distribution of, in ferromanganese alloys (KERN), 1879, A., 286.

in steel (KESSLER), 1873, 204; (KERN), 1881, A., 950.

**Manganese alloys** (BIERMANN), 1879, A., 186.

with iron. See Ferromanganese and Spiegeleisen under Iron.

with mercury (MOISSAN), 1879, A., 693.

with silicon, preparation and use of, in casting steel (KERN), 1877, ii., 522.

**Manganese compounds**, chemical constitution of (LASPEYRES), 1876, ii., 175.

**Manganese salts**, absorption spectra of (BAYLEY), 1880, T., 835.

basic (GORGEV), 1882, A., 1032, 1172.

action of ozone on (MAQUENNE), 1882, A., 1032.

**Manganese silicon aluminate** containing vanadium (PISANI), 1873, 355.

boride (TROOST and HAUTEFEUILLE), 1876, i., 883.

carbides, calorimetric investigation of (TROOST and HAUTEFEUILLE), 1875, 611.

carbonate (SJÖGREN), 1881, A., 698.

See also Rhodochrosite.

calcium carbonate containing barium from Långban (SJÖGREN), 1881, A., 690.

**Manganese dichloride** (*manganous chloride*), preparation of pure, from chlorine residues (PIZZI), 1877, ii., 169.

solution of manganese dioxide in presence of (PICKERING), 1879, T., 669.

action of chlorine on (BERTHELOT), 1881, A., 23.

action of, on potassium permanganate (MORAWSKI and STINGL), 1879, A., 206.

tetrachloride (FISHER), 1878, T., 409.

manganic chloride ( $Mn_2Cl_6$ ), influence of temperature in the preparation of (PICKERING), 1879, T., 670.

action of an excess of hydrochloric acid on (PICKERING), 1879, T., 668.

effect of water on the stability of (PICKERING), 1879, T., 667.

attempts to obtain a double salt of (PICKERING), 1879, T., 671.

oxychloride (GORGEV), 1882, A., 1033.

hydroxides (VELEY), 1880, T., 581; 1882, T., 55.

chemical composition of (VAN BEMMELEN), 1880, A., 849.

manganate and iron manganate (HANNAY), 1878, T., 269.

nitrate, basic, preparation of (GORGEV), 1882, A., 1033.

oxides (WRIGHT and LUFF), 1878, T., 512; (MOISSAN), 1881, A., 74; (PICKERING), 1881, A., 789.

and silicates, law of volumes in (SCHRÖDER), 1878, A., 928.

action of hydrogen on (VELEY), 1882, T., 63.

spontaneous oxidation of, with reference to the manganese recovery process (POST), 1880, A., 73, 368.

estimation of (PICKERING), 1880, T., 136.

manganous oxide, preparation of pure (KESSLER), 1873, 355; (WRIGHT and LUFF), 1878, T., 523.

action of carbonic oxide, carbon and hydrogen on (WRIGHT and LUFF), 1878, T., 523.

trimanganic tetroxide (*manganoso-manganic oxide*; *red oxide of manganese*) (FREMY), 1876, ii., 47; (HANNAY), 1878, T., 270.

preparation of (WRIGHT and LUFF), 1878, T., 520.



**Manganese:—**

*trimanganic tetroxide (manganoso-manganic oxide; red oxide of manganese)*, composition of, formed by heating the higher and lower manganese oxides in air (WRIGHT and LUFF), 1878, T., 525.

action of carbonic oxide, carbon and hydrogen on (WRIGHT and LUFF), 1878, T., 520.

action of hydrochloric acid on (FISHER), 1878, T., 413.

See also Hausmannite.

*sesquioxide (manganic oxide)* (VELEY), 1880, T., 582.

action of hydrochloric acid on (FISHER), 1878, T., 413.

See also Manganite.

*dioxide or peroxide* (WRIGHT and MENKE), 1880, T., 22.

containing antimony (REINSCH), 1881, A., 141.

preparation of (HANNAY), 1878, T., 271; (WRIGHT and LUFF), 1878, T., 513; (GORGET), 1879, A., 600; (WRIGHT and MENKE), 1880, T., 25.

recovery of (JEZLER), 1876, i., 128.

recovery of, from manganese liquors (BEILSTEIN), 1874, 830.

use of nitric oxide for the recovery of, from the manganese liquors (KÜHLMANN), 1874, 829, 924.

recovery of, by the Weldon process (ANON.), 1878, A., 938.

composition and analysis of, recovered in the Weldon process (LUNGE), 1880, A., 528.

recovery process, spontaneous oxidation of manganese oxides with reference to (POST), 1880, A., 73, 368.

Weldon-mud, composition of (POST), 1880, A., 219, 368, 611; (LUNGE), 1880, A., 611, 704; (JEZLER), 1881, A., 323.

composition of commercial (PHIPSON), 1876, ii., 176, 387.

action of, on ammonium nitrate (GATEHOUSE), 1877, ii., 112.

action of carbonic oxide, carbon and hydrogen on (WRIGHT and LUFF), 1878, T., 515.

action of hydrochloric acid on (PICKERING), 1879, T., 654; (BERTHELOT), 1881, A., 22.

action of, on potassium chlorate (MILLS and STEVENSON), 1882, T., 23.

**Manganese dioxide or peroxide**, relations between time, temperature, and rate of reduction of, by hydrogen and by carbonic oxide (WRIGHT and MENKE), 1880, T., 775.

use of, in glass making (ANON.), 1873, 1171; (BONTEMPS), 1874, 718.

cell. See Cells under Electrochemistry.

precipitated by bromine (WRIGHT and MENKE), 1880, T., 40.

analysis of (PHIPSON), 1876, ii., 387; (WAGNER), 1882, A., 555; (LUNGE), 1882, A., 895.

See also Psilomelane and Pyrolusite.

*superoxide* (WRIGHT and MENKE), 1880, T., 40.

some higher oxides of, and their hydrates (VELEY), 1880, T., 581; 1882, T., 56.

**Manganese oxy-acids:—**

manganous acid, Gorgeu's (POST), 1880, A., 219.

capacity of saturation of (GORGEU), 1877, i., 442.

manganites of certain metals (FREMY), 1877, i., 52; (RISLER), 1878, A., 936.

permanganic acid, effect of, on aniline black (WITZ), 1875, 1064.

behaviour of, with various substances (BÖTTGER), 1874, 1055.

permanganates of the alkaline earths, manufacture of (TESSIÉ DU MOTAY), 1874, 1117.

**Manganese phosphates** (ERLENMEYER and HEINRICH), 1878, A., 270.

See also Triphlite.

hypophosphite (RAMMELSBERG), 1873, 9.

silicate (*friedelite*) from the Pyrenees (BERTRAND), 1876, ii., 387.

See also Tephroite.

silicates and oxides, law of volumes in (SCHRÖDER), 1878, A., 928.

silicides of iron and, calorimetric study of the (TROOST and HAUTEFVILLE), 1875, 1239.

manganous sulphate, anhydrous and hydrated, specific gravity of (THORPE and WATTS), 1880, T., 113.

See also Mallardite and Szmikite.

manganous and nickelous sulphates (MILLS and BICKET), 1882, A., 689.

aluminium, chromium and iron *sesquisulphates* (ETARD), 1879, A., 594.

**Manganese sulphide** (DE CLERMONT and GUIOT), 1877, ii., 408, 708.  
tendency of, to oxidise (DE CLERMONT and GUIOT), 1877, ii., 844.  
**sodium sulphide** (SCHNEIDER), 1875, 43.

**thiochromite** (GRÖGER), 1881, A., 226; 1882, A., 15.

**Manganese organic compounds:—**

double cyanides of (DESCAMPS), 1882, A., 154.

**Manganese mineral, a** (ILES), 1882, A., 578.

ores, preparatory treatment of, for the production of ferromanganese and crude manganese in blast-furnaces (LEDEBUR), 1882, A., 1144.

of Bukowina, investigation of (MORAWSKI and STINGL), 1877, ii., 175.

of Canada (HOFFMANN), 1881, A., 546.

aluminous, constitution of (LAPPEYRES), 1876, ii., 175.

cupreous. See Lampadite.

epidote. See Piedmontite.

garnet. See Spessartite.

nodules from the bed of the Pacific Ocean (v. GÜMBEL), 1880, A., 16.

and their occurrence on the sea bottom (BUCHANAN), 1882, A., 369.

**Manganese, detection, estimation and separation:—**

precipitation of, by hydrogen peroxide (ROSENTHAL), 1877, ii., 923.

detection of traces of, in minerals (BONG), 1878, A., 558.

in ashes, detection of, as phosphate (CAMPANI), 1877, ii., 223.

estimation of (FRESENIUS), 1873, 408, 941; (CHATARD), 1873, 531; (GIBBS), 1874, 92; (CLASSEN), 1877, ii., 804, 924; (PARRENO), 1877, ii., 924; (PATTINSON), 1879, T., 365; (MORAWSKI and STINGL), 1879, A., 277; (ROESSLER), 1879, A., 746; 1880, A., 347; (WRIGHT and MENKE), 1880, T., 42; (HASWELL), 1880, A., 585; (VOLHARD), 1881, A., 143; (ILES), 1881, A., 645; (CLASSEN and v. REIS), 1881, A., 1082.

nickel, zinc, and lead, estimation of (RICHE), 1877, ii., 924; 1878, A., 750.

estimation of, in iron and steel. See under Iron.

estimation of, in spiegeleisen. See Spiegeleisen under Iron.

**Manganese, estimation and separation:—**

estimation of, in soils and vegetables (LECLERC), 1873, 193.

separation of (VOLHARD), 1880, A., 141.

separation of, in the form of anhydrous sulphide (CLASSEN), 1877, ii., 514.

separation of, from lime (CLASSEN), 1877, ii., 805.

separation of, from iron and its ores. See under Iron.

separation of, from zinc (CLASSEN), 1879, A., 1055.

**Manganese-blue** (BONG), 1878, A., 558.

**Manganese-bronze** (ANON.), 1877, i., 354.

**Manganese-tungsten bronze** (VENTABLE), 1880, A., 199.

**Manganese-steel** (GAUTIER), 1877, ii., 376; (KERN), 1879, A., 567.

**Manganidocrase** (v. LASAULX), 1881, A., 381.

**Manganite** (GROTH), 1880, A., 14.

crystal system of (SADEBECK), 1881, A., 364.

See also Manganese sesquioxide.

**Manganocyanic acid** and its compounds (DESCAMPS), 1882, A., 154.

**Manganophyll** (IGELSTRÖM), 1873, 150.

**Manganosite** (SÖGREN), 1878, A., 279; 1880, A., 15; 1881, A., 697.

from Långban, Sweden (KLIE), 1879, A., 605.

**Manganous oxide.** See Manganese monoxide.

**Manganous serpentine** from Långban (PAJUKULL), 1879, A., 32.

**Manganspath.** See Rhodochrosite.

**Mangold wurzel** and mangels. See under Agricultural Chemistry.

**Manna** (*Lichen esculentus*), composition of (LATOUR), 1881, A., 931.

**Mannitan.** See under Carbohydrates.

**Mannite** and its derivatives. See Mannitol under Carbohydrates.

**Mannitol-tetra- and -hexa-sulphuric acids** and their salts (CLAESSEN), 1879, A., 1034.

**Mannitotetrachlorhexin** (BELL), 1879, A., 917.

**Manometric apparatus** (MIGNON and ROUART), 1877, i., 437.

**Manure.** See under Agricultural Chemistry.

**Marble**, imitations of, from glue (FLECK), 1879, A., 996.

See also Calcium carbonate and Limestone.

- Marcasite** (FRENZEL), 1874, 445.  
See also Ferrie sulphide under Iron.
- Mares' milk.** See Milk under Agricultural Chemistry.
- Margaric acid** (KRAFFT), 1880, A., 34.
- Margarine** (*olconmargarine*; *butterine*) (RICHE), 1881, A., 209.  
coefficients of expansion of (WIGNER), 1880, A., 70.  
detection of (CASAMAJOR), 1882, A., 341.  
analysis of (RICHE), 1881, A., 210.
- Margarite** (TSCHERMAK), 1878, A., 711; 1880, A., 533; (TSCHERMAK and SIPÖCZ), 1881, A., 234.
- Marjoram oil** (BRUYLANTS), 1880, A., 50.  
Cretan (JAHNS), 1880, A., 112.
- Marl**, composition of (KÖNIG), 1880, A., 60; 1882, A., 551.
- Marmatite** (ROSTER), 1878, A., 281.
- Marmots**, urine of (SACC), 1874, 595.
- Marsh earth** as manure (ANON.), 1881, A., 1077.
- Marshes**, Algerian, salts of the (LE CHATELIER), 1877, ii., 176.
- Marsh-gas.** See Methane.
- Marsh-gas fermentation.** See Fermentation.
- Martite** from Brazil (GORCEIX), 1880, A., 447.
- Mash**, density of (MÄRCKER), 1880, A., 517.  
potato-, surface fermentation of (DELBÜCK), 1880, A., 518.  
influence of fermentation on the nitrogenous constituents of (BEHREND and MORGEN), 1880, A., 357, 819.
- Mashing**, Hollefreund's method of (ANON.), 1874, 1026.
- Masonite** (TSCHERMAK and SIPÖCZ), 1881, A., 234.
- Mass**, influence of, on chemical action (MORRIS), 1882, A., 1261.  
influence of, in affecting the equilibrium of certain chemical systems (MUIR), 1879, T., 313.  
influence of, on the mutual substitution of halogens (POTILIZIN), 1882, A., 457.  
influence of, in the production of insoluble salts (MUIR), 1878, T., 27.  
volumetric determination of the chemical influence of (OSTWALD), 1881, A., 497.  
chemical, Gladstone's experiments relating to (MILLS), 1875, 34.  
See also Affinity.
- Matches**, preparation of, from gun-cotton (BÖTTGER), 1873, 956.
- Matches**, lucifer, compositions (SCHWARZ), 1876, ii., 221.
- Maté.** See Paraguay tea.
- Mateceric acid** (ARATA), 1878, A., 325.
- Matezite.** See  $\beta$ -Pinite under Carbohydrates.
- Matter**, formed of isolated atoms, comparable with material points, remarks on the actual existence of (BERTHELOT), 1876, ii., 471.  
constitution of, in the gaseous state (WURTZ), 1879, T., 1.  
chemical stability of, in sonorous vibration (BERTHELOT), 1880, A., 437.  
fourth state of (CROOKES), 1881, A., 971; 1882, A., 266.
- Mauveine.** See under Colouring Matter.
- Maximum work**, principle of (BERTHELOT), 1878, A., 107.
- Maxite.** See Leadhillite.
- Meadows.** See under Agricultural Chemistry.
- Meals**, presence of corn-cockle seeds in (PETERMANN), 1881, A., 317.  
detection of gypsum, heavy spar, etc., in (BÖTTGER), 1879, A., 183.
- Meat**, penetration of heat into, during cooking (v. WOLFFHÜGEL and HUEPPE), 1882, A., 1152.  
impregnated with common salt, composition of (RUENER), 1878, A., 627.  
changes undergone by, in the process of pickling (VOIT), 1881, A., 66.  
production of the red colour in salting (HARTDEGEN), 1880, A., 80.  
preserved, chemical examination and comparative composition of some specimens of (OGILVIE), 1874, 1018.  
corned, of the St. Louis Canning Company, composition of (WIGNER), 1880, A., 594; 1881, A., 211.  
preserved American, analyses of (MAYER), 1881, A., 771.  
preservation of (REYNOSO), 1876, i., 824; (HERZEN), 1876, i., 992; (JÜDELL), 1878, A., 456; (v. HEYDEN), 1879, A., 996.  
preservation of, for army use (BROXNER), 1874, 400.  
beric acid as a preservative for (ENDEMANN), 1880, A., 767.  
and carbohydrates, processes of decomposition which occur in the animal body on feeding with, and with carbohydrates alone (v. PETTENKOFER and v. VOIT), 1875, 652.

- Meat**, valuation of (VIRCHOW), 1882, A., 676.  
analyses of various pieces of, sold in the Paris Market in 1873 and 1874 (MENE), 1874, 1110.  
fluid (DARBY), 1881, A., 450; (RUBNER), 1881, A., 451.  
nutritive value of (RUBNER), 1880, A., 904.
- Meat-extract**, new (V. LEUBE), 1874, 724.  
composition of (REICHARDT), 1874, 499.  
Liebig's, para-lactic acid in (KLIMENKO), 1881, A., 413.  
and an imitation of it, composition of (ESTCOURT), 1882, A., 248.
- Meat flour**. See under Agricultural Chemistry.
- Meat peptone**, preparation of (CATILLOX), 1881, A., 449.
- Meconic acid** and its derivatives (OST), 1882, A., 601.  
narcotine, and morphine, examination of *Fructus Papaveris* for (KRAUSE), 1876, i., 777.  
and  $\alpha$ -pinelic acid, crystalline forms of (BURGHARDT), 1874, 937.  
salts of (DOTT; RENNIE), 1881, A., 418.
- Meconine** (HESSERT), 1878, A., 419.  
action of fused caustic potash on (BECKETT and WRIGHT), 1876, i., 306.
- Meconinic acid** (LIEBERMANN), 1878, A., 419.
- Meconoisin**, a new derivative of opium (T. and H. SMITH), 1878, A., 801.
- Media** free from oxygen (GUNNING), 1878, A., 267.
- Meerschäum** (*scapolite*), fibrous variety of, from Utah (CHESTER), 1877, ii., 852.  
See also Magnesium silicate.
- Meionite**, chemical composition of (NEMINAR), 1876, i., 193; 1878, A., 388.
- Melam**, behaviour of, to sulphuric acid (JÄGER), 1877, i., 298.
- Melamine** (*cyanuramide*) (CLAUS), 1876, i., 574.  
from guanidine, formation of (NENCKI), 1878, A., 774.  
behaviour of, under the action of heat (DRECHSEL), 1876, ii., 289.  
a new sulphate of (NENCKI), 1878, A., 774.  
thiocyanate (CLAUS), 1877, ii., 309.  
silver compounds of (ZIMMERMANN), 1874, 684.
- Melanchlore** (VOM RATH), 1881, A., 550.
- Melaniline**. See Diphenylguanidine.
- Melanite** garnet from Santorin lava (FOUQUE), 1875, 624.
- Melanophlogite** (V. LASAULX), 1876, ii., 487; (BERTRAND), 1881, A., 1000.
- Melanosiderite**, a new mineral species (COOKE), 1876, i., 54.
- Melanotekite** from Långban, composition of (LINDSTRÖM), 1882, A., 291.
- Melanterite** from Idria (V. ZEPHAROVICH), 1881, A., 232.
- Melanthigenin** and **melanthin** (GREENISH), 1880, A., 719.
- Melanurenic acid**. See Ammelide.
- Melaphyre** and augitic porphyry of South Tyrol, mineralogical composition of the (DOELTER), 1877, i., 584.  
augitic (WOLFF), 1881, A., 27.
- Melaphyres**, examination of (PETERSEN), 1882, A., 588.  
microscopic investigations of the structure and composition of certain (HAARMANN), 1874, 881.
- Melaphyre almond-stones**, some peculiar, from South Africa (COHEN), 1875, 625.
- Melezitose** (VILLIERS), 1877, i., 451.
- Melidoacetic acid** (DRECHSEL), 1875, 1185.
- Melilotic acid**. See Hydro-*o*-coumaric acid.
- Melilotol** (PHIPSON), 1878, A., 576.
- Meliphane** (*melinophane*), crystalline form of (BERTRAND), 1877, i., 178.
- Melissene** (SCHALFÉEFF), 1879, A., 782.
- Melissic acid** (V. PIEVERLING), 1877, i., 587; (SCHALFÉEFF), 1879, A., 782.
- Melitose**. See Raffinose under Carbohydrates.
- Mellitic acid** (*mellie acid*) (V. BAEYER), 1873, 755.  
obtained by the electrolysis of an alkaline solution with carbon electrodes (BARTOLI and PAPASOGLI), 1882, A., 850.  
synthesis of (FRIEDEL and CRAFTS), 1881, A., 40.  
electrolysis of (BUNGE), 1881, A., 798.
- Mellogen** (BARTOLI and PAPASOGLI), 1882, A., 406, 850.
- Melonite** (BURKART), 1874, 32.
- Melons**, amount of sugar in (GOESSMANN), 1880, A., 594.
- Melting point** of anhydrous chlorine (BERTHELOT), 1878, A., 263.  
of acetic and formic acids, and the influence of water on (PETTERS-SON), 1882, A., 3.



**Melting point** of alloys of lead and tin (GNEHM), 1875, 728.

of elements, relation of, to their coefficients of expansion by heat (CARNELLEY), 1879, A., 588.

and boiling point of solid elements, thermochemical relation between (WIEBE), 1879, A., 690.

of the refractory metals (VIOLE), 1880, A., 149.

of metallic salts (CARNELLEY), 1876, i., 489; 1877, i., 365; 1878, T., 275.

of certain inorganic substances (CARNELLEY and WILLIAMS), 1880, T., 125.

of organic compounds (WOLFF), 1876, i., 334.

and boiling point of aldehydohydroxybenzoic acids (TIEMANN), 1879, A., 924.

of homologous compounds, regularity in the (v. BAEYER), 1878, A., 3.

of hydroxy-tolualdehydes and -toluic acids (TIEMANN), 1879, A., 924.

of nitrobenzoic acids (LIEBERMANN), 1877, ii., 782.

of xyenols (TIEMANN), 1879, A., 924.

of fats (RÜDORFF), 1873, 237.

**Melting-point determinations** (KOPF), 1873, 30; (PICCARD), 1875, 863; (HIMLY), 1876, ii., 594; 1877, ii., 162; (CROSS and BEVAN), 1882, T., 111; (MILLS), 1882, A., 567.

high (ANSCHÜTZ and SCHULTZ), 1878, A., 3.

of easily fusible metals and alloys, apparatus for (LIEBERMANN), 1882, A., 914.

of organic substances (TERREIL), 1879, A., 673; (ROSTER), 1880, A., 419.

**Membrane**, an inorganic siliceous (ULLIK), 1879, A., 199.

vegetable, diffusion of gases through (BARTHÉLEMY), 1873, 1251.

See also Diffusion.

**Memeclon tinctorium**, composition of the leaves of (DRAGENDORFF), 1882, A., 1124.

**Menaccanite** (LIVERSIDGE), 1881, A., 994.

**Menthene** and **menthol**. See under Terpenes.

**Menthone** (ATKINSON and YOSHIDA), 1882, T., 50.

**Menthylurethane** (ARTH), 1882, A., 1213.

**Mercaptan**. See Ethyl mercaptan.

**Mercaptides**, metallic (CLAËSSON), 1877, i., 585; ii., 294.

**Mercurialine** (*methylamine*) (SCHMIDT), 1879, A., 40.

**Mercury**, occurrence of, in California (ROLLAND), 1881, A., 689.

occurrence of native, in the Département de l'Hérault (THOMAS), 1876, ii., 386.

presence of, in the spring "du Rocher," Mont Carnadore, Puy-de-Dôme (GARRIGOU), 1877, ii., 418.

presence of, in the mineral waters of Saint-Nectaire (WILLM), 1879, A., 697.

preparation of, at the Stefansfoundry in the Zips (LANGER), 1881, A., 768.

purification of (VULPIUS), 1879, A., 125; (BRÜHL), 1879, A., 508, 602; (MEYER), 1879, A., 602.

and its compounds, thermochemical data for (THOMSEN), 1876, i., 34; (BERTHELOT), 1880, A., 688.

heat-conducting power of, independent of temperature (HERWIG), 1874, 865; 1875, 38.

vapour, specific heat of (NAUMANN), 1876, i., 37.

specific heat of (WINKELMANN), 1877, i., 678.

solid, specific gravity of (MALLET), 1878, A., 273.

freezing of, with snow and hydrochloric acid (WITZ), 1876, i., 867.

movements of electrified (HERWIG), 1877, i., 677; 1878, A., 191.

production of rotatory movements in (BÖTTGER), 1879, A., 102.

vapour, condensation of, on selenium in the Sprengel vacuum (MOSS), 1876, ii., 271.

solubility of, in water (SEGURA), 1877, ii., 843.

action of gaseous hydrochloric acid on (BERTHELOT), 1879, A., 298.

action of nitric acid on (ACWORTH), 1875, 828.

action of oxygen on (AMAGAT), 1881, A., 782, 1107.

action of sulphur and iodine on (v. SCHRÖTTER), 1873, 476.

oxidation of (KIRCHMANN), 1873, 476.

supposed oxidation of, by oxygen in presence of water (SKEY), 1876, ii., 608.

and other metals, spontaneous oxidation of (BERTHELOT), 1881, A., 791.

substitution of, for hydrogen in creatine (ENGEL), 1875, 756.

**Mercury alloys** (*amalgams*) (DE SOUZA), 1876, i., 522; ii., 383; (CASAMAJOR), 1878, A., 474; (FLIGHT), 1880, A., 707; (MERZ and WEITH), 1881, A., 881.

specific heats of (WIEDEMANN), 1878, A., 466.

action of the electric current on fused (OBACH), 1876, ii., 37.

surfaces, motions produced by dilute acids on some (SABINE), 1879, A., 431.

with ammonium, composition of (ROTTLEDGE), 1873, 135.

with cobalt and with chromium (MOISSAN), 1879, A., 693.

with gold (KASANZEFF), 1878, A., 937; (CHESTER), 1878, A., 938.

with iron (CASAMAJOR), 1878, A., 474; (MOISSAN), 1879, A., 693.

preparation of (RAMANN), 1881, A., 879.

with manganese and with nickel (MOISSAN), 1879, A., 693.

with potassium, chemical constitution of (BERTHELOT), 1879, A., 883; 1880, A., 1.

heat of formation and of oxidation of (BERTHELOT), 1879, A., 884.

action of dilute hydrochloric acid and of water on (BERTHELOT), 1879, A., 864.

action of, on potassium *tetra*- and *penta*-thionates (LEWES), 1882, T., 300.

with silver, native (PISANI), 1873, 356.

with sodium (*sodium amalgam*) (BERTHELOT), 1879, A., 864.

chemical constitution of (BERTHELOT), 1879, A., 883; 1880, A., 1.

heats of formation and oxidation of (BERTHELOT), 1879, A., 884.

action of, on benzylic chloride (ARONHEIM), 1876, i., 580.

action of, on *p*-chlorobenzoic acid (HARTMANN), 1876, i., 256.

action of, on ethylic citrate (CLAUS), 1875, 1252.

action of dilute hydrochloric acid and of water on (BERTHELOT), 1879, A., 864.

action of, on *d*-nitrobenzoic acid (MICHLER), 1875, 644.

**Mercury compounds** (SCHNAUSS), 1876, i., 342.

law of volumes in (SCHRODER), 1878, A., 927.

with ammonia and palladium (WILM), 1880, A., 854.

**Mercurammonium** compounds (GERRESHEIM), 1879, A., 438.

chloride, behaviour of iodine to, in the presence of alcohol (BÖTTGER), 1878, A., 199.

thiocyanate (FLEISCHER), 1876, i., 910.

**Mercury salts** and their electrolytic decomposition (HANNAY), 1873, 565.

double, and heats of formation of (BERTHELOT), 1882, A., 684.

with chromium (CLARKE and STERN), 1882, A., 293.

with potassium (EDER and ULM), 1882, A., 806.

haloid, emission spectra of (PEIRCE), 1880, A., 81.

action of sulphuric acid on the (DITTE), 1879, A., 299.

decomposition of (SCHÄR), 1879, A., 694.

decomposition of, by haloid acids and by the haloid salts of potassium (BERTHELOT), 1882, A., 682.

double decompositions of (BERTHELOT), 1882, A., 1020.

**Mercury beryllium chloride** (ATTERBERG), 1873, 1004.

selenates (CAMERON and DAVY), 1881, A., 1099.

acid sulphate composition of (BRAHAM), 1881, A., 355.

sodium thiosulphate and iodide (EDER and ULM), 1882, A., 806.

thiocarbonate, estimation of carbon disulphide in (FINOR and BERTRAND), 1877, i., 744.

thioselenides (BRUSH), 1881, A., 361; (COMSTOCK), 1881, A., 361; 1882, A., 148.

**Mercurous** chloride (*calomel*) (SCHNAUSS), 1876, i., 342.

molecular weight of (FILETTI), 1882, A., 466.

heat evolved in the action of chlorine on (BERTHELOT), 1873, 1095.

dissociation of the vapour of (DEBRAY), 1877, i., 47.

action of cane-sugar and lime on (VULPIUS), 1879, A., 889.

action of mercuric nitrate on (DRECHSEL), 1882, A., 18.

solubility of, in hydrochloric acid (RUYSSSEN and VARENNE), 1881, A., 881.

stability of (HOGLAN), 1881, A., 512.

formation of mercuric chloride from (VULPIUS), 1879, A., 889.

**Mercurous chromates** (M. M. and P. RICHTER), 1882, A., 1029.  
*iodide* (YVON), 1873, 1105; (LEFORT), 1874, 1135; (SCHNAUSS), 1876, i., 342.  
 crystalline form and refraction of (DES CLOIZEAUX), 1878, A., 474.  
**Mercuric chloride** (*mercury dichloride*; *corrosive sublimate*), formation of, from mercurous chloride (VULPIUS), 1879, A., 889.  
 specific heat of, and action of heat on, under low pressures (CARNELLEY), 1882, T., 317.  
 reactions of (DEBRAY), 1882, A., 929.  
 action of, on cast-iron (ZABUDSKY), 1882, A., 660.  
 action of sulphurous acid on, in presence of sodium chloride (DEBRAY), 1882, A., 929.  
 compounds of, with hydrochloric acid (DITTE), 1881, A., 355.  
 conversion of, into cyanide by means of potassium cyanide (HANNAY), 1873, 567.  
*ammonium chloride* (*white precipitate*), decomposition of, by iodine (FLÜCKIGER), 1876, i., 522.  
*thallous chloride* (JÖRGENSEN), 1873, 476.  
*chloridide* (KÖHLER), 1879, A., 1017.  
*iodate*, preparation and reactions of (CAMERON), 1876, ii., 479.  
*iodide* (KÖHLER), 1879, A., 602, 889; (KRAUT), 1879, A., 772.  
 coefficients of expansion of (RODWELL and ELDER), 1880, A., 443.  
 effect of heat on (RODWELL and ELDER), 1879, A., 498; 1880, A., 443.  
 melting point of (KÖHLER), 1879, A., 889.  
 action of sodium thiosulphate on (EDER and ULM), 1882, A., 806.  
 compound of, with silver chloride (LEA), 1874, 963.  
*nitrate*, action of alcohol on (COWPER), 1881, T., 242.  
 action of hydrogen on (RUSSELL), 1874, 11.  
 oxide, heats of formation and of decomposition of (ECHOLS), 1882, A., 18.  
 decomposition (dissociation) of, by heat (MYERS), 1873, 603; (DEBRAY), 1873, 1098.  
 different behaviour of iodine to, under different conditions (LIPPMANN), 1876, i., 44.

**Mercuric oxide**, action of sodium on (BEKETOFF), 1881, A., 348.  
 and iodine, action of, on anthracene (ZEIDLER), 1876, ii., 80.  
 and iodine, action of, on *m*-amido-benzoic acid (BENEDIKT), 1875, 894.  
 compound of, with benzamide (OPPENHEIM and v. CZARNOMSKY), 1874, 272.  
 sulphate, action of haloid acids on (DITTE), 1879, A., 299.  
 compound of, with mercuric sulphide (SPRING), 1880, A., 157.  
 sulphide, formation of (HAUSMANN), 1875, 1001.  
 vapour-density of (V. and C. MEYER), 1879, A., 769.  
 action of cupric chloride on (HEUMANN), 1875, 132.  
 action of nitric acid on (GRAMP), 1877, i., 282.  
 compounds of (HEUMANN), 1875, 132.  
 basic salts of (SPRING), 1880, A., 157.  
 estimation of, without filtering, washing, and drying (POPPER), 1879, A., 480.  
 See also Cinnabar and Vermilion.  
**Mercury organic compounds**:—  
*butylide* (CAHOUS), 1874, 349.  
*cyanide*, decomposition of (MAUMENE), 1881, A., 794.  
 decomposition of, by dilute acids alone, and in presence of sodium chloride (PLUGGE), 1879, A., 1064.  
 action of bromine on (MERZ, ZETTER, RUOFF, and MOE), 1879, A., 721.  
 compounds of, with the chlorides of the earth metals (AHLEN), 1877, ii., 423.  
*thallium cyanide* (FRONMÜLLER), 1878, A., 304.  
*dioctyl* (EICHLER), 1880, A., 229.  
*ethyl*, action of, on iodides (SUIDA), 1882, A., 409.  
*ethylic chloride* (ANON.), 1874, 985.  
*iodomethyl* (SAKURAI), 1880, T., 661; 1881, T., 487.  
*mercaptide* (CLÄSSON), 1877, ii., 295.  
 two derivatives of (JACKSON and OPPENHEIM), 1876, i., 364.  
*methylene iodide* (SAKURAI), 1880, T., 658; 1881, T., 485.  
*methylene chloridide* (SAKURAI), 1882, T., 361.  
*octyl hydrate*, iodide, and chloride (EICHLER), 1880, A., 229.

**Mercury organic compounds:—**

- oxycyanides (JOANNIS), 1881, A., 1116.  
 oxythiocyanate (FLEISCHER), 1876, i., 910; (PHILIPP), 1876, ii., 74.  
 propyl (CAHOURS), 1873, 366.  
 ammonium thioeyanate (FLEISCHER), 1876, i., 910.  
 tolylic chloride (MICHAELIS and BECKER), 1882, A., 732.  
*p*-xylyl (JACOBSEN), 1882, A., 187.

**Mercury ores from Mexico (V. SANDBERGER), 1876, i., 531.**

occurrence and working of (ANON.), 1878, A., 842.

assay of, and compounds of, by the blowpipe (ATTWOOD), 1879, T., 207.

**Mercury, detection, estimation and separation:—**

detection of, in animal substances (LUDWIG), 1882, A., 99.

detection of, in extracts and in urine (MAYENCON and BERGERET), 1874, 602.

detection of, in urine (FÜRBRINGER), 1878, A., 1010.

use of Smithson's pile for the detection of, in mineral waters (LEFORT), 1880, A., 510.

estimation of (TUSON and NELSON), 1877, ii., 679; (VOLHARD), 1878, A., 750; (CLARKE), 1878, A., 916; 1879, A., 976; (ANON.), 1882, A., 338.

estimation of, by means of potassium cyanide (HANNAY), 1873, 565.

estimation of glucose and (HAGER), 1878, A., 246.

**Mesacon-amide and -anilide (STRECKER), 1882, A., 1281.****Mesaconic acid (oxyletric acid) (BARBAGLIA), 1874, 787; (BÖTTINGER), 1877, i., 591; 1878, A., 32; (DEMARÇAY), 1879, A., 458; 1880, A., 625; 1881, A., 255; (FITTIG and KRUSEMARK), 1881, A., 416; (ANSCHÜTZ), 1882, A., 829.**

preparation of (MORAWSKI), 1875, 1254.

constitution of (HENRY), 1875, 1177.

electrolysis of (AARLAND), 1873, 1221.

action of chlorine on (MORAWSKI), 1875, 1254.

reaction of, with ferric chloride (AARLAND), 1873, 377.

action of zinc dust and alcohol on (BÖTTINGER), 1877, i., 590.

relation of, to citraconic acid (FITTIG), 1877, ii., 430.

**Mesaconic acid (oxyletric acid), mesadi-bromomethylsuccinic acid from (FITTIG), 1877, ii., 738.**

methylacrylic acid from (PREHN), 1875, 750; (FITTIG), 1877, ii., 735.

derivatives of (PETRI), 1881, A., 1032; (STRECKER), 1882, A., 1281.

additive products of (FITTIG), 1877, ii., 737.

sodium salt of, action of chlorine on (MORAWSKI), 1876, i., 564.

**Mesaconic chloride (PETRI), 1881, A., 1032.****Mesidine (amidomesitylene) (BIEDERMANN and LEDOUX), 1875, 569; (V. HOFMANN), 1875, 571.**

nitro- (HÜBNER), 1878, A., 144; (KNECHT), 1882, A., 1200.

derivatives (EISENBERG), 1882, A., 955.

**Mesitol (hydroxymesitylene) (BIEDERMANN and LEDOUX), 1875, 569, 761; (JACOBSEN), 1879, A., 529.**

mono- and di-bromo- (JACOBSEN), 1879, A., 529.

nitro- (KNECHT), 1882, A., 1200.

**Mesitonic acid (di- $\alpha$ -methyl- $\beta$ -acetyl-propionic acid) and its derivatives (PINNER), 1881, A., 796; 1882, A., 941.****Mesityl ethyl carbonate. See Ethylic trimethylphenylcarbamate.****Mesityl oxide. See Methyl isobutenyl ketone.****Mesitylcarbimide (EISENBERG), 1882, A., 956****Mesitylene (1:3:5-trimethylbenzene) (LADENBURG), 1875, 63; (JACOBSEN), 1876, ii., 77; 1877, ii., 447; (ADOR and RILLIET), 1879, A., 527; (PREIS and RAYMAN), 1879, A., 623.**

conversion of allylene into (SCHRONE), 1875, 625.

formation of (JACOBSEN), 1877, ii., 447.

constitution of (LADENBURG), 1876, i., 384.

methylation of (JACOBSEN), 1882, A., 391.

sulphamine- and hydroxy-acids derived from (JACOBSEN), 1881, A., 429.

amido-. See Mesidine.

diamido- (LADENBURG), 1876, i., 385.

nitro- (BIEDERMANN and LEDOUX), 1875, 569.

**Mesitylenedisulphonic acid and its salts (BARTH and HERZIG), 1881, A., 733.**



- Mesitylenephthalic acid** (GRESLY and MEIER), 1882, A., 848.
- Mesitylenequinone.** See Hydroxy-*m*-xyloquinone.
- Mesitylenesulphonamide**, oxidation of (HALL and REMSEN), 1881, A., 820.
- Mesitylenesulphonic acid**, oxidation of (ILES and REMSEN), 1877, ii., 777.  
potassium salt of, products of the action of fused potash on (JACOBSEN), 1879, A., 529.
- Mesitylenic acid** (2:5-dimethylbenzoic acid) (WROBLEWSKI), 1878, A., 978.  
substitution-products of (SCHMITZ), 1879, A., 155.  
*o*- and *p*-amido-,  $\alpha$ - and  $\beta$ -bromo-, and  $\alpha$ - and  $\beta$ -nitro-, and their salts (SCHMITZ), 1879, A., 155.  
 $\beta$ -nitro-, melting-point of (JACOBSEN), 1879, A., 248.
- Mesitylethylthioic acid.** See Ethylic trimethylphenylthiocarbamate.
- Mesitylic acid**, and its derivatives (PINNER), 1882, A., 941.
- Mesitylphthalimide.** See Phthalomesidide.
- Mesitylsuccinimide.** See Succinotrimethylphenylimide.
- Mesitylthio-carbamide**, and -carbimide (EISENBERG), 1882, A., 956.
- Mesocamphoric acid.** See under Camphoric acid.
- Mesole.** See Farocelite.
- Mesolite** from Etna (v. LASAULX), 1882, A., 284.
- Mesolites** (LUEDECKE), 1881, A., 1007.
- Mesorcinol.** See Trimethylresorcinol.
- Mesotartaric acid.** See *i*-Tartaric acid.
- Mesoxalic acid** (*dihydroxymalonic acid*) (PETRIEFF), 1874, 787.  
constitution of (PERKIN), 1877, ii., 102; (PETRIEFF), 1878, A., 490.  
decomposition of (BÖTTINGER), 1880, A., 237; 1881, A., 415.
- Mesoxalylcarbamide.** See Alloxan.
- Mesozoic diabase**, normal, on the Atlantic border, mineralogical composition of (HAWES), 1882, A., 585.
- Metabolism**, proteid, of the body, influence of sodium and calcium carbonates on (OTT), 1882, A., 750.  
influence of glycerol on (LEWIN), 1880, A., 817.
- Metacinnabarite** (*quadracazarite*) (PETERSEN), 1873, 42.
- Metacetaldehyde.** See Metacetaldehyde under Acetaldehyde.
- Metallic surfaces**, decorating, by the aid of photography (LECLÈRE), 1882, A., 247.  
white paint for (SELS), 1873, 205.
- Metalloids**, spectra of (SCHUSTER), 1880, A., 430.  
union of, by pressure (SPRING), 1881, A., 499; 1882, A., 273.
- Metallurgical hearths**, utilisation of the gases issuing from (CAILLETET), 1877, ii., 949.
- Metallurgy**, novelties in (ANON.), 1881, A., 768.
- Metal-work**, composition of ancient (FLIGHT), 1882, T., 134.
- Metals** accompanying iron (TERREIL), 1877, ii., 523.  
magnetic, relationship of the (BARRETT), 1874, 229.  
diathermancy of (AYMONNET) 1877, ii., 405.  
spectra of (EDELMAUN), 1873, 461; (CROOKES), 1881, A., 773.  
absorption spectra of, volatilized by the oxyhydrogen flame (LOCKYER and ROBERTS-AUSTEN), 1876, ii., 156.  
spectra of, at the base of flames (GOUR), 1877, ii., 105.  
thermoelectric behaviour of (v. FITZGERALD-MINARELLI), 1876, i., 866.  
dipped in saline solutions, effect of sunlight on the electrical behaviour of (HANKEL), 1877, ii., 818.  
electric resistance of (BENOIT), 1873, 832.  
chemico-electric relations of, in solutions of potassium salts (GORE), 1881, A., 962; 1882, A., 261.  
electrical deposition of, and construction of metal-covered glass specula (WRIGHT), 1878, A., 251.  
changes of volume accompanying electrolytic deposition of (BOUTY), 1881, A., 671.  
changes in volume of, on fusion (NIES and WINKELMANN), 1881, A., 783.  
replacement of electropositive by electronegative, in a voltaic cell (GLADSTONE and TRIBE), 1876, ii., 37; (SKEY), 1876, ii., 266.  
division of the positive, in the galvanic circuit between two acids (FUCHS), 1877, i., 677.  
heat evolved on combination of, with hydrogen (MOUTIER), 1875, 415, 1151.  
boiling points of (CARNELLEY and WILLIAMS), 1879, T., 563.  
easily fusible, apparatus for determination of the melting points of (LIEBERMANN), 1882, A., 914.  
refractory, specific heats and melting points of (VIOLE), 1880, A., 149.

- Metals**, elasticity of, at different temperatures (PISATI), 1877, i., 38; ii., 162, 700.
- alleged expansion of, during solidification (MALLER), 1874, 1047.
- affinities of, for oxygen, as shown by the heat developed and the contraction produced during combination (MÜLLER-ERZBACH), 1874, 220; 1876, i., 669; 1882, A., 451.
- affinity of, for sulphur and oxygen (SCHUMANN), 1877, ii., 704.
- affinity value of fluorine for, as deduced from the law of smallest volumes (MÜLLER-ERZBACH), 1882, A., 137.
- affinity value of the silicofluorides of, as deduced from the law of smallest volumes (MÜLLER-ERZBACH), 1882, A., 1024.
- molecular structure of (KALISCHER), 1882, A., 792.
- molecular colours of (STEIN), 1873, 342.
- colouring of (ANON.), 1875, 922.
- influence of one, on the surface of another metal placed at a short distance (PELLAT), 1882, A., 921.
- agglomeration of finely divided, by hydrogen (TRIBE), 1874, 415.
- union of, by pressure (SPRING), 1881, A., 499; 1882, A., 273.
- volatilisation of, in a vacuum (DEMARÇAY), 1882, A., 1264.
- coating, with their oxides to guard them against atmospheric action (ANON.), 1879, A., 563.
- action of heat on, in a vacuum (EDISON), 1879, A., 1018.
- reactions of, with chlorine, bromine and iodine (MERZ and WEITH), 1874, 334.
- influence of chlorine on the properties of (KÜNZEL), 1875, 387.
- action of hydrogen dioxide on (FAIRLEY), 1877, i., 1.
- action of lead and manganese dioxides on the haloid salts of, in presence of acetic acid (MÜLLER and KIRCHER), 1882, A., 1132.
- action of nitric acid on (ACWORTH), 1875, 828; (ARMSTRONG and ACWORTH), 1877, ii., 54; (MAUMENÉ), 1881, A., 876.
- action of oils on (WATSON), 1881, A., 772.
- action of ozone on (VOLTA), 1880, A., 205.
- action of phosphorus on solutions of (OPPENHEIM), 1873, 244; (BÖTTGER), 1874, 1060; 1878, A., 645.
- Metals**, behaviour of certain, in a solution of potassium ferrieyanide (BÖTTGER), 1873, 282, 473.
- heavy, behaviour of sulphuretted hydrogen with the salts of (DELFFS), 1880, A., 746.
- action of different solutions on (WAGNER), 1876, ii., 600.
- action of mineral waters on (DAUBRÉE), 1881, A., 238.
- electromotive order of certain, in solutions of potassium cyanide with reference to the use of this salt in milling gold (SKEY), 1876, ii., 588.
- direct combination of, with cyanogen (BERTHELOT), 1879, A., 909.
- compounds of, with ethylic chlor-acetoacetate (ALLIHX), 1879, A., 915.
- Metals**, detection, estimation and separation:—
- detection of, by means of the microscope (REINSCH), 1882, A., 245.
- detection of, in organic mixtures (SELM), 1873, 1166.
- rare, detection of, in pyrites flue-dust (PLAYFAIR), 1879, A., 973.
- precipitation of, by zinc (DAVIES), 1875, 311.
- which yield indefinite oxides, new method of estimating (MAUMENÉ), 1874, 1180.
- estimation, electrolytic, of (WRIGHTSON), 1877, i., 340; (SCHICHT; FRESSENIUS and BERGMANN), 1880, A., 747.
- estimation and separation of (LUCKOW), 1880, A., 282; (BEILSTEIN and JAWEIN), 1882, A., 97.
- reduction of metallic oxides by hydrogen, as a means for the separation and estimation of (MÜLLER-ERZBACH), 1875, 381.
- Classen and v. Reis' process for the estimation and separation of, by electrolysis (FRANCKEN), 1882, A., 1320.
- separation, electrolytic, of (CLASSEN), 1882, A., 896.
- heavy, of the ammonium sulphide group, separation of (ZIMMERMANN), 1880, A., 188; 1881, A., 122.
- Metameric compounds** (SCHREINER), 1881, A., 88.
- explanation of the difference in boiling points of (NAUMANN), 1874, 529, 563.
- Metaphosphoric acid**. See under Phosphorus.
- Metaxite** from Reichenstein, chemical composition of (BAUER), 1882, A., 481.

- Meteoric dust** containing a large quantity of metallic iron, which fell at Catania on March 29, 1880 (SILVESTRI), 1881, A., 561.
- Meteoric iron** (SMITH), 1874, 239; 1875, 1243.  
product of oxidation of (MEUNIER), 1874, 35.  
spectroscopic examination of gases from (WRIGHT), 1876, i., 27.  
orientation of the cleavage planes in, by means of Widmannstadt's figures (BREZINA), 1882, A., 153.  
crystallised sulphhydrocarbon found in the interior of a mass of (SMITH), 1876, i., 537.  
magnetic anomaly of ferric oxide prepared from (SMITH), 1875, 426.  
celestialite in (SMITH), 1876, i., 537.  
of unknown locality, in the Smithsonian Museum (SHEPARD), 1881, A., 1111.  
from Shingle Springs, Eldorado Co., California (SHEPARD), 1873, 255; (SILLIMAN), 1874, 34.  
from Ivanpah, California (SHEPARD), 1881, A., 394.  
from Cape Colony (SMITH), 1873, 610.  
from North Carolina (HIDDEN), 1881, A., 1017.  
from Lexington Co., S. Carolina (SHEPARD), 1882, A., 153.  
at St. Catherine, formation of (MEUNIER), 1878, A., 713.  
anomalous magnetism of (SMITH), 1881, A., 704.  
from Cohahuila, nodules of chromite in (SMITH), 1881, A., 705.  
from Whitfield Co., Georgia (HIDDEN), 1882, A., 153.  
from Hungen (BUCHNER; TSCHERMAK), 1879, A., 366.  
from Howard Co., Indiana (SMITH), 1874, 967.  
from Mount Descubridora in Mexico (BURKART), 1874, 557.  
Neuntmansdorf, of the Dresden Museum (GEINITZ), 1877, ii., 177.  
from Rittersgrün, examination of (WINKLER), 1881, A., 560.  
from Dickson Co., Tennessee (SMITH), 1875, 1243; 1876, i., 352.  
a fourth mass from Augusta Co., Virginia (MALLET), 1878, A., 959.  
See also Meteorites.
- Meteoric mineral**, a (SMITH), 1881, A., 29.
- Meteoric nickel-iron**, report on Meunier's papers, 1879, A., 955.  
synthetical imitation of (MEUNIER), 1881, A., 1018.
- Meteoric stone** of Waconda, Kansas (SHEPARD), 1877, i., 290.  
analysis of a, and detection of vanadium in it (ARJOHN), 1874, 104.  
fall of two, in the United States (SMITH), 1875, 1167.
- Meteorite** of the eukrite-group (DAUBRÉE), 1879, A., 610.  
from Cleberne Co., Alabama, U.S. (HIDDEN), 1881, A., 394.  
of Albarello (MAISSEN), 1880, A., 369.  
from Bandoug, Java (DAUBRÉE), 1873, 357.  
from the neighbourhood of Berdjansk (HIRIAKOFF), 1879, A., 445.  
of Breitenbach, new crystallised form of silica (*asmanite*) discovered by Maskelyne in the (VOM RATH), 1874, 554.  
of Guadenfrei, in Silesia (v. LASAULX), 1881, A., 237; (GALLE and v. LASAULX), 1881, A., 395.  
of Grosnaja (TSCHERMAK), 1880, A., 20.  
of Ibbenbühen in Westphalia (VOM RATH), 1873, 255.  
of Estherville, Emmet Co., Iowa (SHEPARD), 1881, A., 395; (SMITH), 1881, A., 561.  
Japanese (DIVERS), 1882, A., 814.  
from Kerilis (DAUBRÉE), 1881, A., 1017.  
of La Bécasse (DAUBRÉE), 1880, A., 226.  
of Lancé (v. DRASCHE), 1876, i., 55.  
of Nash Co. (SMITH), 1876, i., 692.  
of Orvinio and Chantonay, brecciated structure of (TSCHERMAK), 1875, 873.  
of Roda, composition of (PISANI), 1875, 438.  
from Russia (DAUBRÉE), 1876, i., 352.  
from Soko-Banja in Servia, lithological and geological examination of (MEUNIER), 1881, A., 1017.  
from the Sierra de Chaco, lithological composition of (MEUNIER), 1873, 358.  
from South America (DOMEYKO), 1876, i., 353.  
of Virba, near Vidin, Turkey (DAUBRÉE), 1874, 1147.  
from the United States (BREZINA), 1882, A., 153.  
of Vavilovka (PRENDEL), 1880, A., 20.  
from Wisconsin (SMITH), 1876, ii., 615.  
of Zsadány (WARTHA), 1879, A., 210; (PILLITZ), 1879, A., 397; (COHEN), 1879, A., 609.

- Meteorites** (BERTHELOT), 1874, 950;  
(SMITH), 1878, A., 121.  
nature and origin of (MOHR), 1876,  
i., 685.  
mode of formation of (MEUNIER),  
1881, A., 1018.  
formation of, and volcanic agency  
(TSCHERMAK), 1876, i., 536; 1877,  
i., 178.  
synthesis of (FOUQUÉ and MICHEL-  
LÉVY), 1882, A., 292.  
carbon-compounds in (SMITH), 1876,  
ii., 392, 615; 1877, i., 288.  
gases contained in (WRIGHT), 1876,  
i., 27, 352; 1877, i., 289, 702;  
(MALLET), 1876, i., 892.  
black coating of certain, compared  
with the crusts produced upon  
terrestrial rocks by atmospheric  
agency (MEUNIER), 1873, 141.  
pitted surface of (MASKELYNE), 1877,  
i., 180.  
erosive action of strongly compressed  
hot gases, with reference to the  
history of (DAUBRÉE), 1877, ii.,  
835; 1879, A., 1024.  
sporadosideral, metallic granules of  
(MEUNIER), 1879, A., 609.  
See also Meteoric iron.
- Meteors**, two remarkable, observed in  
Sweden (v. NORDENSKIÖLD), 1880,  
A., 859.
- Methacrylic acid**. See Methylacrylic  
acid.
- Methæmoglobin**. See under Hæmoglobin.
- Methaldehyde**. See Formaldehyde.
- Methane** (*marsh-gas*), synthesis of  
(BRODIE), 1873, 744; (JAHN),  
1880, A., 370.  
from sodium acetate, composition of  
(FRANKLAND and THORNE), 1878,  
T., 91.  
heat of combustion of (BERTHELOT),  
1881, A., 8.  
and carbon dioxide, influence of  
electricity on mixtures of (P. and  
A. THIENARD), 1873, 864.  
affinity of carbon and hydrogen in  
(THOMSEN), 1873, 127, 838.  
action of bromine on (MERZ and  
WEITH), 1879, A., 302.  
chemical history of the aromatic  
derivatives of (MELDOLA), 1882, T.,  
187.  
benzolyzed (FRANKLAND and  
THORNE), 1878, T., 91.  
fractional combustion of hydrogen  
and (HEMPEL), 1879, A., 747.  
detection of, in the air of mines  
(MALLARD and LE CHATELIER),  
1879, A., 673.
- Methane** (*marsh-gas*), apparatus for  
estimating, in mines (COQUILLON),  
1876, ii., 428; 1877, ii., 806; 1878,  
A., 843.
- Methane**, chlorine and bromine deriva-  
tives of (DAMOISEAU), 1881, A.,  
238.  
*di*bromo-. See Methylenic bromide.  
*tri*bromo-. See Bromoform.  
*tetra*bromo-. See Carbon *tetra*-  
bromide.  
bromonitro-, and *di*bromonitro-  
(TCHERNIAC), 1876, i., 901.  
*di*bromodinitro-, and its alkali salts  
(LOSANITSCH), 1882, A., 955.  
*tri*bromonitro- (*bromopierin*) (TCHER-  
NIAC), 1876, i., 901.  
chloro-. See Methylic chloride.  
*di*chloro-. See Methylenic chloride.  
*tri*chloro-. See Chloroform.  
*tetra*chloro-. See Carbon *tetra*-  
chloride.  
chloro*di*bromo-. See Chlorobromo-  
form.  
*di*chlorobromo-. See Bromochloro-  
form.  
*tri*chlorobromo-, preparation and  
physical properties of (THORPE),  
1880, T., 203.  
*tri*chloronitro-. See Chloropierin.  
*i*odo-. See Methylic iodide.  
*di*iodo-. See Methylenic iodide.  
*tri*iodo-. See Iodoform.  
nitro- (PREIBISCH), 1874, 462;  
(MEYER), 1875, 632.  
sodium derivatives of (MEYER and  
RILLIET; MEYER and CHOJ-  
NACKI), 1873, 261.  
reactions of the heavy metals  
with (MEYER and CHOJNACKI),  
1873, 262.  
*tri*nitro-. See Nitroform.
- Methanedisulphonic acid** (*methylene-  
disulphonic acid*) (SMYTH), 1875, 164.
- Methanephosphonic chloride** (v.  
HOFMANN), 1873, 884.
- Methanthrene and methanthrol** (OUDE-  
MANS), 1874, 73.
- Methanetricarboxylic acid** (*formyltri-  
carbonic acid*) (PFANKUCH), 1873,  
362; (CONRAD), 1879, A., 707.
- Methazonic acid** (LECCO), 1876, ii., 287.
- Methenyl-amidine and -amidoxime**.  
See Form-amidine and -amidoxime.
- Methenylamidophenol** (LADENBURG),  
1877, ii., 752.
- Methenylamidophenyl mercaptan** (v.  
HOFMANN), 1880, A., 388; (PATERNO  
and CANZONERI), 1880, A., 885.  
amido- (v. HOFMANN), 1879, A.,  
806.



- Methenylamidotolyl mercaptan (Hess), 1881, A., 597.
- Methenyldiphenyldiamine. See Diphenylformamidine.
- Methenyldi-*o*-tolyldiamine. See Di-tolylformamidine.
- Methenyl-*o*-phenylenediamine (WUNDT), 1878, A., 667.
- Methoxide, aluminium (GLADSTONE and TRIBE), 1881, T., 3.
- o*-Methoxybenzaldehyde (*methylsalicylaldehyde*), action of, on phenanthraquinone (JAPP and STREATFEILD), 1882, T., 152.
- acids from (PERKIN), 1877, i., 414; 1881, T., 409.
- p*-Methoxybenzaldehyde. See Anisaldehyde.
- p*-Methoxybenzamide. See Anisamide.
- o*-Methoxybenzenylamidophenanthrene (*anhydrous-methoxybenzoyldiamidophenanthrene*) (JAPP and STREATFEILD), 1882, T., 154.
- o*-Methoxybenzenylamidophenanthrol (JAPP and STREATFEILD), 1882, T., 155.
- p*-Methoxybenzoic acid. See Anisic acid.
- p*-Methoxybenzophenone (RENNIE), 1882, T., 227.
- o*-Methoxybenzylic alcohol (*methylsalicylic alcohol*) (BÖTSCH), 1882, A., 174.
- o*-Methoxybromo- $\beta$ -phenyl dibromopropionic acids (PERKIN), 1881, T., 418.
- $\alpha$ -Methoxy-*n*-butyramide (DUVILLIER), 1879, A., 523.
- $\alpha$ -Methoxy-*n*-butyric acid, and its derivatives (DUVILLIER), 1878, A., 662; 1879, A., 523.
- 5-Methoxycoumarin (TIEMANN and MÜLLER), 1882, A., 53.
- Methoxydimethylamidobenzoic acid (*dimethylamidanisic methyl ether*), formation of, from trimethylanisbetaine (GRIESS), 1873, 1146.
- p*-Methoxydiphenylethylene (*methoxystilbene*; *stilbophenol*) (OGLIALORO-TODARO), 1880, A., 253.
- Methoxyethoxybenzene (*methylethylpyrocatechol*) (TIEMANN and KOPPE), 1882, A., 54.
- 3:1-Methoxyethoxybenzoic acid, and the action of hydriodic acid on (WASSERMANN), 1876, i., 706.
- $\beta$ -Methoxyglutaric acid, and its silver salt (RABININ), 1880, A., 372; 1881, A., 404.
- formation of, from methylallyl-carbinol (SOROKIN), 1880, A., 383; 1881, A., 414.
- Methoxyhydroxy-. See Hydroxy-methoxy-.
- p*-Methoxymandelic acid and its amide (TIEMANN), 1882, A., 57.
- Methoxymethylpropylbenzene (*thymol methyl ether*), oxidation of (PATERNÒ and CANZONERI), 1880, A., 247.
- 6-bromo- and 6-nitro- (PATERNÒ and CANZONERI), 1880, A., 883.
- $\alpha$ -Methoxynaphthalene ( *$\alpha$ -naphthyl methyl ether*), conversion of  $\alpha$ -naphthylamine into, and compound of, with picric acid (HANTZSCH), 1880, A., 813.
- Methoxynaphthalenes,  $\alpha$ - and  $\beta$ - (MARCIETTI), 1880, A., 261.
- Methoxyphenylacrylic acids. See Methylcoumaric acids.
- p*-Methoxyphenylamidoacetic acid (TIEMANN), 1882, A., 57.
- oa*-Methoxyphenylangelic acid, and its crystalline form (PERKIN), 1881, T., 436.
- o* $\beta$ -Methoxyphenylangelic acid (PERKIN), 1877, i., 416.
- dibromo-, dibromide of (PERKIN), 1881, T., 437.
- Methoxyphenylangelic acids, *o*- $\alpha$ - and - $\beta$ -, action of bromine and nascent hydrogen on (PERKIN), 1881, T., 437.
- p*-Methoxyphenylangelic acid (PERKIN), 1877, i., 413.
- Methoxy- $\beta$ -phenyl dibromopropionic acids, *o*- $\alpha$ - and - $\beta$ - (PERKIN), 1881, T., 420.
- o*-Methoxyphenylbutyric acid, and tetrabromo- (PERKIN), 1881, T., 433.
- p*-Methoxyphenylcinnamic acid (OGLIALORO-TODARO), 1880, A., 253.
- oa*-Methoxyphenylcrotonic acid, and the action of fuming hydriodic acid on (PERKIN), 1881, T., 431.
- action of hydrobromic acid on (PERKIN), 1878, T., 212.
- o* $\beta$ -Methoxyphenylcrotonic acid (PERKIN), 1877, i., 415.
- dibromo-, dibromide of (PERKIN), 1881, T., 434.
- Methoxyphenylcrotonic acids, *o*- $\alpha$ - and - $\beta$ -, action of bromine and nascent hydrogen on, and crystalline forms of (PERKIN), 1881, T., 432.
- p*-Methoxyphenylcrotonic acid (PERKIN), 1877, i., 411.
- o*-Methoxyphenylpropionic acid (*methyl-o-coumarilic acid*), and its derivatives (PERKIN), 1881, T., 419.
- o*-Methoxy- $\beta$ -phenylpropionic acid and its barium salt (PERKIN), 1881, T., 416.
- p*-Methoxy- $\beta$ -phenylpropionic acid (PERKIN), 1877, i., 411.

- Methoxyphenylthiocarbamide** (SALKOWSKI), 1875, 64.
- o*-Methoxyphenylvaleric acid**, *tetra-bromo-* (PERKIN), 1881, T., 437.
- 1-Methoxy-3:4-phthalic acid** (SCHALL), 1879, A., 793.
- Methoxyisophthalic acids**, 2- and 4- (SCHALL), 1879, A., 793.
- m*-Methoxypropylbenzoic acid**, nitro- (PATERNO and CANZONERI), 1880, A., 884.
- 1-Methoxyquinoline**, and its salts (BEDALL and FISCHER), 1882, A., 412.
- 3-Methoxyquinoline-4'-carboxylic acid**. See Quininic acid.
- Methoxyquinone** (MÜHLHÄUSER), 1882, A., 302.
- m*-Methoxysalicylaldehyde**. See Hydroxymethoxybenzaldehyde.
- m*-Methoxysalicylic acid** (*2-hydroxy-5-methoxybenzoic acid*) (TIEMANN and MÜLLER), 1882, A., 53.
- p*-Methoxysalicylic acid** (*2-hydroxy-4-methoxybenzoic acid*) (TIEMANN and PARRISIUS), 1881, A., 271.
- Methoxystilbene**. See *p*-Methoxydiphenylethylene.
- Methoxyterephthalic acid** (SCHALL), 1879, A., 793; (PATERNO and CANZONERI), 1880, A., 247.
- 1-Methoxytetrahydroquinoline** and its salts (BEDALL and FISCHER), 1882, A., 413.
- o*-Methoxy-*m*-tolualdehyde** (*methyl-*p*-homosalicylaldehyde*; *methyl-*o*-hydroxy-*m*-tolualdehyde*) (SCHOTTEN), 1878, A., 878.
- 3-Methoxy-*p*-toluic acid**, *di*bromo- (PATERNO and CANZONERI), 1880, A., 884.
- nitro- (PATERNO and CANZONERI), 1880, A., 246, 884; (CANZONERI), 1881, A., 269.
- Methoxytoluic acids**, formation and properties of (SCHALL), 1879, A., 792.
- Methyl amyl ketones** [b.p. 151° and 142°-146°] (SCHORLEMMER), 1873, 320.
- (*methylamylpinacolin*) (WISCHNEGRADSKY), 1875, 878.
- Methyl isoamyl ketone** (GRIMSILAW), 1873, 319; (MIXTER), 1874, 784; (ROHN), 1878, A., 486.
- Methyl butenyl ketone**. See Allylacetone.
- Methyl isobutenyl ketone** (*mesityl oxide*) (CLAISEN), 1875, 161; (PAWLOFF), 1877, ii., 310, 732.
- reactions and derivatives of (CLAISEN), 1876, i., 895.
- Methyl isobutenyl ketone** (*mesityl oxide*), bodies analogous to (PAWLOFF), 1877, ii., 733.
- Methyl *tert*-butyl ketone** (*pinacolin*), constitution of (BITTLEROFF), 1874, 245, 1081; 1875, 444; (PAWLOFF), 1878, A., 966.
- Methyl dipropylmethyl ketone**. See Methyl heptyl ketone.
- Methyl ennyl ketone**. See Methyl nonyl ketone.
- Methyl ether**. See Dimethyl oxide.
- Methyl ethyl ketone** (*methylacetone*), pinacone and pinacolin from (LAWRINOWITSCH), 1876, i., 897; 1877, ii., 427.
- hexabromo-* (DEMOLE), 1879, A., 220.
- Methyl heptadecyl ketone** (*dioctylacetone*) (GUTHZEIT), 1880, A., 872.
- Methyl heptyl ketone** (*dipropylacetone*) (BURTON), 1882, A., 600.
- Methyl hexyl ketone** (HARTWIG), 1881, A., 791.
- Methyl mercaptan**, perchlorinated. See Thiocarbonyl tetrachloride.
- Methyl nitrethyl ketone** (MEYER and RILLIER), 1873, 261.
- Methyl nitrosoethyl ketone** (MEYER and ZÜBLIN), 1878, A., 487, 659.
- Methyl nonyl ketone** (GUTHZEIT), 1880, A., 872.
- Methyl *n*-octyl ketone** (JOURDAN), 1880, A., 314.
- Methyl phenyl ketone**. See Acetophenone.
- Methyl propyl ketone** (*ethylacetone*), oxidation of (HERCZ), 1877, ii., 426.
- oxime of (MEYER and ZÜBLIN), 1878, A., 487, 660.
- Methyl isopropyl ketone** (*dimethylacetone*) (MÜNCH), 1875, 247; 1876, ii., 67; (WISCHNEGRADSKY), 1878, A., 393; (FLAWITZKY), 1878, A., 564.
- from *d*-nitroheptoic acid (KACHLER), 1878, A., 514.
- chloro- (ETARD), 1877, ii., 427.
- Methylacetamide** (v. HOFMANN), 1882, A., 822.
- Methylacetone**. See Methyl ethyl ketone.
- isonitroso-*. See Dimethyl diketone, oxime of.
- p*-Methylacetotoluidide** (THOMSEN), 1878, A., 218.
- Methylacetylenecarboxylic acid**, thiocarbamide of. See Butinoyl- $\psi$ -thiocarbamide.
- Methylacetyl-**. See Acetyl-methyl-

- $\alpha$ -Methylacrylic acid** (*methacrylic acid*) (FITTIG), 1876, i., 898; 1877, ii., 736; (BALBIANO), 1879, A., 616; (FITTIG and ENGELHORN), 1880, A., 378; (BALBIANO and TESTA), 1880, A., 871.  
 from citraconic acid (PREHN), 1875, 632; (FITTIG), 1877, ii., 735.  
 from mesaconic acid (PREHN), 1875, 750; (FITTIG), 1877, ii., 735.  
 in Roman chamomile oil (FITTIG), 1877, i., 97; ii., 429.  
 molecular refraction of (BRÜHL), 1882, A., 827.  
 polymeric of (FITTIG), 1880, A., 120; (FITTIG and ENGELHORN), 1880, A., 379; (BALBIANO and TESTA), 1880, A., 871.  
 bromo-, metallic salts of (MORAWSKI), 1878, A., 213.  
*isobromo-* (FITTIG and KRUSEMARK), 1881, A., 416.  
 action of potash on (FRIEDRICH), 1881, A., 413.  
*mono-* and *di-chloro-*, and their salts (MORAWSKI), 1878, A., 213.
- Methylal**, thermochemical data for (BERTHELOT and OGIER), 1881, A., 675.  
 action of, on toluene, benzylic chloride and diphenyl (WEILER), 1875, 151.
- Methylalizarin** (*hydroxymethoxyanthraquinone*) (SCHUNCK), 1873, 900.
- Methylizarin** (3:4-*dihydroxy-2-methylanthraquinone*) (FRAUDE), 1879, A., 635.
- Methylalloxan** (FISCHER), 1882, A., 629; (MALY and ANDREASCH), 1882, A., 633.
- Methylalloxantin** (ANDREASCH), 1882, A., 1055.
- Methylallyl** (*butylene*), preparation of (GROSHEINTZ), 1878, A., 562.
- Methylallylcarbinol** (*pentacyl alcohol*) (WAGNER), 1882, A., 377.
- Methylallylpropylcarbinol** (*octenyl alcohol*) (SEMELANITZIN), 1880, A., 372; 1881, A., 402.
- Methylamarine methiodide** (MELDOLA), 1880, A., 882.
- Methylamidoacetic acid**. See Sarcosine.
- $\alpha$ -Methylamido-*n*-butyric acid** (DUVILLIER), 1881, A., 87.
- "**Methylamidocarbimidoamido-*l*-nitrophenol**" (GRIESS), 1882, A., 969.
- Methylamidoethylic formate**. See Ethylic methylcarbamate.
- $\alpha$ -Methylamidohexoic acid** (DUVILLIER), 1880, A., 543.
- $\alpha$ -Methylamidopropionic acid** (LINDENBERG), 1876, i., 700.
- 6-Methylamidothymoquinone** and its derivatives (ZINCKE), 1881, A., 595.
- $\alpha$ -Methylamidoisovaleric acid** (DUVILLIER), 1881, A., 713.
- Methylamine** (SCHMIDT), 1879, A., 40.  
 in commercial trimethylamine hydrochloride (EISENBERG), 1881, A., 83.  
 occurrence and origin of, in urine (SCHIFFER), 1881, A., 631.  
 new mode of formation of (VINCENT), 1873, 498; (MORRISON), 1882, A., 592.  
 production of, in methylic alcohol (VINCENT), 1874, 150.  
 action of, on acetone (GÜTSCHMANN), 1879, A., 1035.  
 action of, on anilin (DALE and SCHORLEMMER), 1879, A., 926.  
 action of methylic nitrate, bromide, and iodide on (DUVILLIER and BUISINE), 1881, A., 33, 1027.  
 hydrochloride (VINCENT), 1878, A., 401.  
 methyl sulphate (CLAËSSON and LUNDVALL), 1881, A., 241.  
 oxybenzoates, action of heat on (KUPFERBERG), 1878, A., 320.  
 phthalate, action of phosphorus pentachloride on (WALLACH and KAMENSKI), 1881, A., 285.
- Methylamines**, production of (DUVILLIER and BUISINE), 1881, A., 1026.
- Methylisomamylaniline** (CLAUS and RAUTENBERG), 1881, A., 584.
- Methylamylcarbinol** (*sec.-heptylic alcohol*) (GRIMSHAW), 1873, 313.
- Methylisomamylcarbinol** (*sec.-heptylic alcohol*) (GRIMSHAW), 1873, 318; (ROHN), 1878, A., 486.
- Methylisomamylpiperidine** and its iodide (SCHOTTEN), 1882, A., 982.
- Methylaniline** (v. HOFMANN), 1874, 807; 1877, ii., 604; (GIRARD), 1876, i., 264; (KERN), 1877, ii., 325; (NÖLTING and BOASSON), 1877, ii., 755, 885; (FISCHER), 1878, A., 311; (VINCENT), 1878, A., 401; (ANON.), 1879, A., 494.  
 new sources of (SPILLER), 1873, 759.  
 manufacture of (KERN), 1876, i., 935; (HÄUSSERMANN), 1879, A., 995.  
 homologous tertiary diamines obtained in the (DÖEBNER), 1879, A., 786.  
 methyl sulphate (CLAËSSON and LUNDVALL), 1881, A., 241.  
 nitrosamine (*methylephenylnitrosamine*) (FISCHER), 1878, A., 310.

- Methylaniline**, *p*-bromo-, and its nitrosamine (WURSTER and SCHEIBE), 1880, A., 107.  
 nitroso- (GABRIEL and MEYER), 1882, A., 189.
- Methylaniline-green**. See Methylgreen.
- Methylanilinesulphonic acid** (SMYTH), 1875, 164.  
 formation of, from methylaniline ethyl sulphate (LIMPRICHT), 1875, 268.
- Methylanisidine** (MÜHLHÄUSER), 1882, A., 302.
- 2-Methylantracene** and its compounds (FISCHER), 1875, 1021; (LIEBERMANN), 1877, i., 610; (NIETZKI), 1878, A., 154; (WACHENDORFF and ZINCKE), 1878, A., 232; (SADTLER and McCARTER), 1881, A., 1129; (LIEBERMANN and SEIDLER), 1882, A., 858.  
 occurrence of, in coal-tar (JAPP and SCHULTZ), 1877, ii., 624.  
 formation of, from diphenyldimethylmethane (WEILER), 1875, 152.  
*di*bromo- (FISCHER), 1875, 155.
- Methylantraquinone** and its carboxylic acid (WACHENDORFF and ZINCKE), 1878, A., 232.
- Methylarbutin** (SCHIFF), 1881, A., 610.  
 synthesis of (MICHAEL), 1882, A., 174.
- Methylated spirit**, assay of wood spirit for the preparation of (BARDY), 1881, A., 942, 1174.  
 examination of (CAZENEUVE), 1882, A., 1002.  
 examination of whiskey and other spirits for (DUPRÉ), 1876, ii., 215.
- Methylatrolactic acid**. See Hydroxytolylpropionic acid.
- Methylaurin** (ZULKOWSKI), 1881, A., 900.  
 action of ammonia on (ZULKOWSKI), 1881, A., 725.  
 action of potash on, and bromination of (ZULKOWSKI), 1882, A., 1291.  
 hydrobromide and sulphate of, and *tetrabromo*- (ZULKOWSKI), 1882, A., 1291.
- m*-**Methylbenzaldehyde**. See *m*-Tolaldehyde.
- Methylbenzaldoxime**, *p*-nitro- (GABRIEL and MEYER), 1882, A., 188.
- Methylbenzoic acid**. See Toluic acid.
- Methylbenzophenone**. See Phenyl tolyl ketone.
- p*-**Methylbenzyloxyphenylacetic acid**. See Benzyltolylglycollic acid.
- Methyl-blue**. See Methylene-blue.
- Methyl-*p*-bromo-*o* nitrobenzene**, nitroso-. See Benzaldoxime, bromo-*o*-nitro-.
- Methylbutylbenzene**. See *p*-*iso*Butyltoluene.
- Methyl-*tert*-.butylcarbinol** (*sec*-.*hexylic alcohol*; *pinacolic alcohol*) (FRIEDEL and DA SILVA), 1873, 488.
- Methylisobutylglyceric acid** (DEMARÇAY), 1878, A., 661.
- Methylisobutylketonesulphonic acid**, sodium salt of (PINNER), 1882, A., 913.
- Methylcarbamide** (FISCHER), 1882, A., 628.  
 occurrence and origin of, in urine (SCHIFFER), 1881, A., 631.
- 1-Methylcarbopyrrolic acid** (BELL), 1879, A., 525.
- Methylcarbazole**, and its compound with picric acid (GRAEBE and v. ADLERSKRON), 1880, A., 660.
- Methyldichloramine** (KÖHLER), 1879, A., 781.
- Methylchlorophenetoils**. See Chlor-ethyleresols.
- Methylchrysin** (*tectochrysin*) (PICCARD), 1873, 1236, 1238; 1874, 1165; 1877, ii., 342.
- Methyleinchonine** and its dimethiodide (CLAUS and MÜLLER), 1881, A., 289.
- α*-**Methyleinnamic acid**. See Phenylcrotonic acid.
- Methylconiine**, synthesis of (MICHAEL and GUNDELACH), 1881, A., 825.
- Methyl-*o*-coumaric acid**, bromo-, and its decomposition by alkalis (PERKIN), 1881, T., 422.  
*d*nitro- (PERKIN), 1881, T., 417.
- α*-**Methyl-*o*-coumaric acid** and its barium salt (PERKIN), 1881, T., 409.  
 action of phosphorus *pentachloride* on (PERKIN), 1877, i., 421.  
 action of hydriodic acid on (PERKIN), 1878, T., 215; 1881, T., 429.
- β*-**Methyl-*o*-coumaric acid** (PERKIN), 1877, i., 414; 1881, T., 411.
- Methyl-*o*-coumaric acids**, *α*- and *β*-, reactions of, and crystalline forms of (PERKIN), 1881, T., 415.
- Methyl-*p*-coumaric acid** and its chloride and amide (PERKIN), 1877, i., 408; (KÖRNER and MENOZZI), 1882, A., 731.
- Methyl-*o*-coumarilic acid**. See *o*-Methoxyphenylpropilic acid.
- Methylcoumarin** (*propionic coumarin*) and its derivatives (PERKIN), 1875, 10.  
 crystalline forms of (PERKIN), 1881, T., 446.



- Methylcoumarin** (*propionic coumarin*), products derived from (PERKIN), 1881, T., 429.  
*β*-*mono*- and -*di*-bromo- (PERKIN), 1875, 12.
- Methylcoumarinsulphonic acid** (*sulphopropionic coumarilic acid*) (PERKIN), 1875, 14.
- Methylcresol**. See 3:4-Dimethoxymethylbenzene.
- Methylcrotonic acid**. See Tiglic acid.
- p-Methylcumene**. See *p*-*iso*Cymene.
- Methylcyanamide** (BERNTHSEN and KLINGER), 1878, A., 569.
- Methyldeoxybenzoin** (*p-tolyl benzyl ketone*) (MANN), 1881, A., 1034.
- Methyldiacetamide** (v. HOFMANN), 1882, A., 822.
- Methyldiacetonamine**, and its salts (GÖTSCHMANN), 1879, A., 1035.
- Methyldiallylcarbinol** (*oetynyl alcohol*), synthesis of (SOROKIN and SAYTZEFF), 1876, i., 695; (SOROKIN), 1877, ii., 299.  
 heat of combustion of (LUGININ), 1881, A., 871.
- Methyldibenzhydroxamate**. See Dibenzmethylhydroxylamine.
- p-Methyldibenzyl**. See Phenyl-*p*-tolylethane.
- Methyldi-*tert*-.butylacetic acid** (*heulecoic acid*; *undecylic acid*) (BUTLEROFF), 1880, A., 231.
- 5-Methyl-2:4-diethyl-*m*-diazine** (*cyanconiine*) (v. MEYER), 1881, A., 54.  
 6-amido-. See Cyanethine.
- Methyldiethylacetic acid**. See Heptoic acid.
- Methyldiethylsulphone** (KRÜGER), 1877, i., 186.
- 2'-Methyldihydroindole** (*hydromethylketole*) and its nitrosamine (JACKSON), 1881, A., 735.
- Methyldioxydiethylamine**. See Hydroxyethoxymethyl ethylamine.
- Methyldiphenyl** (*phenyltoluene*), action of heat on (BARBIER), 1875, 254.
- p-Methyldiphenyl** (*p-phenyltoluene*) (CARNELLEY), 1876, i., 13; 1880, T., 701.  
 amido-, and *mono*- and *di*-nitro- (CARNELLEY), 1876, i., 21.
- Methyldiphenyldiamine**. See Diphenylformamidine.
- Methylenebisdimethylaniline** (HANNHART), 1879, A., 714.
- Methylene-blue**, dyeing with (ANON.), 1879, A., 416; 1882, A., 127.
- Methylenecaffeic acid** and its derivatives (LORENZ), 1881, A., 48.
- Methylenedibenzamide** (HEPP and SPIESS), 1877, i., 314.
- Methylenedioxyphenylacrylic acid**. See Methylenecaffeic acid.
- Methylenedioxyphenylamidoacetic acid** (LORENZ), 1881, A., 729.
- Methylenedioxyphenylangelic acid** (LORENZ), 1881, A., 727.  
 See also Hydropiperic acid.
- Methylenedioxyphenylisobutyric acid**. See Methylene- $\alpha$ -homohydrocaffeic acid.
- Methylenedioxyphenylglycollic acid** (LORENZ), 1881, A., 729.
- Methylenedioxyphenylmethacrylic acid**. See Methylene- $\alpha$ -homocaffeic acid.
- Methylene- $\alpha\alpha$ -dioxyphenylpropionic acid**. See Methylenehydrocaffeic acid.
- Methylenedioxyphenylvaleric acid**, reactions of the ammonium salts of (LORENZ), 1881, A., 728.
- Methylenediphenylacetamide** (HEPP), 1878, A., 66.
- Methylenediphenylene**. See Diphenylene methane.
- Methylenedisulphonic acid**. See Methanedisulphonic acid.
- Methylenehexaphenylphosphonium iodide** (MICHAELIS and GLEICHMANN), 1882, A., 1063.
- Methylene- $\alpha$ -homocaffeic acid** and its derivatives (LORENZ), 1881, A., 48.
- Methylene- $\alpha$ -homohydrocaffeic acid** (LORENZ), 1881, A., 49.
- Methylenehydrocaffeic acid** (LORENZ), 1881, A., 49.
- Methylenemethylamine** (ROMENY), 1878, A., 718.
- Methylenephthalide**, bromo- (GABRIEL and MICHAEL), 1878, A., 734.
- Methylenephthalyl** (GABRIEL), 1881, A., 733.
- Methyleneprotocatechuic acid**. See Piperonylic acid.
- Methylenepyrocathechol**, amido-; hydrochloride (HESSE), 1880, A., 248.  
*mono*- and *di*-nitro- (v. JOEST and HESSE), 1878, A., 733.
- Methylene-red** (KOCH), 1879, A., 628; 1880, A., 110.
- Methylenic bromide** (*dibromomethane*) (STEINER), 1874, 782; (DAMOISEAU), 1881, A., 238.  
 chloride (*dichloromethane*), preparation of (GREENE), 1880, A., 307.  
 physical properties of (THORPE), 1880, T., 194.  
 thermochemical data for (BERTHELOT and OGIER), 1881, A., 674.

- Methylenic chloriodide** (*chloriodomethane*) and its mercury salt (SAKURAI), 1882, T., 360.
- iodide** (*diiodomethane*), action of, on amines (LERMONTOFF), 1875, 145.
- action of, on methylic sulphide (CAHOUS), 1875, 1181.
- action of, on sodium mercaptide (CLAËSSON), 1877, ii., 293.
- mercury derivative of (SAKURAI), 1880, T., 658; 1881, T., 485; 1882, T., 360.
- selenocyanate (PROSKAUER), 1875, 144.
- thiocyanate (LERMONTOFF), 1875, 144.
- $\beta$ -Methylethenyltricarboxylic acid.** See Propanetricarboxylic acid.
- Methylethylacetic acid.** See Valeric acid.
- Methylethylamylammonium hydroxide.** action of heat on (v. HOFMANN), 1881, A., 571, 745.
- m*-Methylethylbenzene** (*m-ethyltoluene*) (WROBLEWSKI), 1875, 455; 1878, A., 977; (CIAMICIAN), 1880, A., 126.
- p*-Methylethylbenzene** (*p-ethyltoluene*) (JANNASCH and DIECKMANN), 1875, 1189.
- oxidation of (MORSE and REMSEN), 1878, A., 405.
- Methylethylbenzhydroxylamine** (LOSSEN and ZANNI), 1877, i., 188.
- Methylethylcarbamide** (SCHREINER), 1881, A., 88.
- 1-Methyl-2-ethylenetetrahydropyridine.** See Tropicine.
- s*-Methylethylethylene.** See  $\beta$ -Amylene.
- Methylethylglyoxaline** (*oxalethylene*), and its salts and reactions (WALLACH and STRICKER), 1880, A., 546.
- action of, on the animal system (SCHULZ), 1881, A., 246.
- chloro- (WALLACH), 1874, 984; 1881, A., 717; (WALLACH and OPPENHEIM), 1878, A., 55.
- physiological action of (SCHULZ), 1881, A., 246.
- chlorobromo- (WALLACH and OPPENHEIM), 1878, A., 55.
- Methylethylhydroxyacetic acid.** See Hydroxyvaleric acid.
- Methylethylmalonic acid** (CONRAD and BISCHOFF), 1880, A., 627.
- Methylethylloxamide** (WALLACH and WEST), 1877, ii., 186.
- Methylethyl- $\beta$ -oxybutyric acid.** See  $\beta$ -Hydroxyheptic acid.
- Methylethylphenol** (MAZZARA), 1880, A., 882.
- Methylethylisopropylisobutylphosphonium iodide** (v. HOFMANN), 1873, 883.
- Methylethylpropylcarbinol** (*tert.-heptylic alcohol*) (PAWLOFF), 1877, ii., 310, 732.
- Methylethylisopropylcarbinol** (*tert.-heptylic alcohol*) (PAWLOFF), 1877, ii., 310, 732; (KASCHIRSKY), 1882, A., 37.
- Methylethylisopropylmethane** (*heptane*), methyl amyl ketone derived from (SCHORLEMMER), 1873, 322.
- 3:2-Methylethylpyridine** ( *$\beta$ -collidine*) (RICHARD), 1880, A., 480; (OECHSNER DE CONINCK), 1881, A., 56.
- 2:5-Methylethylpyridine** (*aldehydcollidine*) (WURTZ), 1879, A., 704.
- Methylethylpyrocatechol** (*ethylguaiaicol; methoxyethoxybenzene*) (TIEMANN and KOPPE), 1882, A., 54; ;
- Methylethylsulphone** (BECKMANN), 1879, A., 39.
- Methyleugenol**, formation of, by the action of baryta on oil of cloves (CHURCH), 1875, 117.
- bromo-, and dibromide (WASSERMANN), 1879, A., 790.
- Methyleugetic acid** and the action of potassium permanganate on (WASSERMANN), 1879, A., 790.
- Methylisoserulic acid.** See Dimethylcaffeic acid.
- $\alpha$ -Methylglutaric acid** (*butanedicarboxylic acid*), synthesis of (WISLICENUS and LIMPACH), 1878, A., 783.
- Methylglyceramine** (HANRIOT), 1879, A., 1031.
- platinochloride (HANRIOT), 1878, A., 780.
- Methylglyccine.** See Sarcosine.
- Methylglyoxaline** (*oxalacmethylene*) (WYSS), 1878, A., 24; (GOLD-SCHMIDT), 1882, A., 166; (WALLACH), 1882, A., 821.
- chloro-, and its salts (WALLACH and SCHULZE), 1881, A., 572.
- Methyl green** (APPENZELLER), 1873, 1242; (ANON.), 1873, 1272.
- dyeing wool with (ANON.), 1876, i., 817.
- See also Aniline-green and Iodine-green under Colouring matters.
- Methylguaiaicol.** See Veratrol.
- Methylguanidine** (TAWILDAROFF), 1873, 75.
- Methylhexylcarbinol** (*octylic alcohol*) (SCHORLEMMER), 1874, 1029.
- purification and boiling point of (NEISON), 1875, 207.
- boiling point of (SCHORLEMMER), 1875, 209.

**Methylhomocinchonidine** and its derivatives (CLAUS and BOCK), 1881, A., 184.

**Methyl-*p*-homosalicylaldehyde.** See *o*-Methoxy-*m*-tolualdehyde.

**Methylhydantoic acid** (BAUMANN and HOPPE-SEYLER), 1874, 466.

formation of (BAUMANN), 1874, 578.

**$\alpha$ -Methylhydantoin** (*lactylurea*) (URECH), 1873, 380; 1874, 147.

formation of, simultaneous with the preparation of alanine from potassium cyanide (HEINTZ), 1874, 149.

**Methylhydrocinnaminein.** See Benzylic benzylmethylacetoacetate.

***p*-Methylhydrocinnamic acid** (v. GERICHEN), 1879, A., 230.

**Methyl-*o*-hydrocoumaric acid.** See *o*-Methoxy- $\beta$ -phenylpropionic acid.

**Methylhydroxylamine**, ethers of (LOSSEN and ZANNI), 1877, i., 188.

**Methylic acetate**, preparation of (PABST), 1880, A., 541.

action of bromine on (STEINER), 1874, 886; 1875, 139.

chloro- (HENRY), 1873, 1117.

acetylhydroxyterephthalate (BURKHARDT), 1877, ii., 337.

acetylulvate (SPIEGEL), 1881, A., 97.

acrylate, polymerides of (KAHLBAUM), 1881, A., 250.

**Methylic alcohol**, presence of, in plants (GUTZEIT), 1880, A., 914.

pure, preparation of (BARDY and BORDET), 1879, A., 520.

production of, by distillation of dry calcium formate (FRIEDEL and DA SILVA), 1873, 1118.

specific heat and other physical characters of mixtures of water and (DUPEÉ), 1873, 466; (LECHER), 1879, A., 688.

action of chloride of lime on (GOLDBERG), 1882, A., 30.

action of, on ethylic chlorosulphonate (BEHREND), 1877, ii., 290.

action of electrolytic oxygen on (RENARD), 1875, 552.

action of iodated potassium iodide on (GUYARD), 1879, A., 595.

action of sulphuryl chloride on (BEHREND), 1877, ii., 289.

action of zinc chloride on (LE BEL and GREENE), 1879, A., 49, 1029.

danger of employing, in certain industries (POINCARÉ), 1879, A., 335.

use of, in preparing colouring matters (ANON.), 1881, A., 211.

compound of, with antimony *pentachloride* (WILLIAMS), 1876, ii., 465.

**Methylic alcohol**, compound of, with lithium and magnesium chlorides (SIMON), 1880, A., 310.

some properties of mixtures of, with methylic cyanide (VINCENT and DELACHANAL), 1880, A., 524.

detection of, in ethylic alcohol (CAZENEUVE and COTTON), 1881, A., 197.

estimation of, in ethylic alcohol (RICHE and BARDY), 1875, 1292.

methods of estimating, in the manufacture of colouring matters (KRAEMER and GRODZKI), 1877, ii., 229.

estimation of, in wood spirit (KRELL), 1874, 291; (FISCHER), 1875, 1053; (BARDY and BORDET), 1879, A., 487.

estimation of acetone in (KRAEMER), 1880, A., 826.

See also Wood naphtha.

**Methylic aldehydovanillate** (*methylic isonoropropionate*) (TIEMANN and MENDELSON), 1877, ii., 487.

anilidoacetate (MEYER), 1876, i., 372.

benzophosphinate. See Methylic carboxybenzenephosphonate.

benzoylthiocarbamate and its sodium derivative (MIQUEL), 1877, i., 709; ii., 871.

*o*-bromobenzoate (RHALLIS), 1880, A., 119.

$\alpha$ -bromo-*n*-butyrate, preparation of (DUVILLIER), 1879, A., 523.

bromophenylcarbamate (DENNSTEDT), 1880, A., 633.

*isot*libromosuccinate (PICTET), 1881, A., 253.

bromoterephthalate (FISCHLI), 1879, A., 639.

*isobutyl*formate. See Methylic *isovalerate*.

*isobutyl*ic carbonate (RÜSE), 1881, A., 252.

sulphate (BEHREND), 1877, ii., 291.

butyrate, physical properties of (KAHLBAUM), 1879, A., 521.

carbonate (SCHREINER), 1881, A., 88; (COUNCLER), 1881, A., 251;

(RÜSE), 1881, A., 252.

*trichloro*- (COUNCLER), 1881, A., 251.

carboxybenzenephosphonate (MICHAELIS and PANEK), 1881, A., 604.

chloracetate (HENRY), 1873, 1117; (MEYER), 1876, i., 372.

chloride (*chloromethane*) (VINCENT), 1878, A., 400.

preparation of (GROVES), 1874, 641.

**Methylic chloride** (*chloromethane*), liquid, density and coefficient of expansion of (VINCENT and DELACHANAL), 1879, A., 294.  
 action of, on aniline (v. HOFMANN), 1877, ii., 604.  
 **$\alpha$ -chloro-crotonate** and -propionate, physical properties of (KAHLBAUM), 1879, A., 521.  
**chloroformate** (RÖSE), 1881, A., 252.  
 **$\alpha$ -dichloropropionate** (BECKURTS and OTTO), 1877, ii., 181.  
**chlorosulphonate**, action of ethylic alcohol on (BEHREND), 1877, ii., 290.  
**cinchoneronate**. See Apophyllenic acid.  
**cinnamate** (ANSCHÜTZ and KINNICUTT), 1878, A., 981.  
**citrate** (PERKIN), 1881, T., 555.  
   molecular refraction of (BRÜHL), 1882, A., 829.  
**crotonate**, physical properties of (KAHLBAUM), 1879, A., 521.  
**cyanide**. See Acetonitrile.  
**cyanofornate** and *paracyanofornate* (WEDDIGE), 1875, 447.  
**dibenzoyl- $\beta$ -phenylglycerate**, action of alcoholic potash on (ANSCHÜTZ and KINNICUTT), 1879, A., 645.  
**diethyl propanetricarboxylate** (BISCHOFF and EMMERT), 1882, A., 1191.  
**dimethylamidoacetate**, methiodide of (KRAUT), 1876, ii., 626.  
**dimethylamidobenzoate**, formation of, from trimethylbenzobetaine (GRIESS), 1873, 1146.  
**di-*o*- and -*p*-tolylimidothiocarbamates** (*tolylimidotolylmethylthiocarb- $\frac{1}{2}$ amides*) (WILL and BIELSCHOWSKI), 1882, A., 1090.  
**ethylic carbonate** (SCHREINER), 1881, A., 88; (RÖSE), 1881, A., 252.  
   sulphate (BEHREND), 1877, ii., 290.  
   sulphide and its compounds (KRÜGER), 1877, i., 187.  
 **$\alpha$  $\beta$ -dithiocarbonate** (SALOMON), 1874, 362.  
**eupittonate** (v. HOFMANN), 1880, A., 165.  
**isoferuleate** (TIEMANN and WILL), 1881, A., 740.  
**formate**, preparation of (VOLHARD), 1875, 876; (BARDY and BORDER), 1879, A., 520.  
   chloro- (HENRY), 1873, 1117.  
**hemipinate** ( $\alpha$ -acid), products of the distillation of, with lime (WEGSCHEIDER), 1882, A., 1207.  
**hesperitate**. See Methylic *isoferuleate*.

**Methylic hydrogen sulphate** (CLAËSSON), 1879, A., 776.  
   electrolysis of (RENARD), 1880, A., 25.  
***p*-hydroxymesitylenate** (JACOBSEN), 1879, A., 643.  
**hydroxyterephthalate** (BURKHARDT), 1877, ii., 337.  
 **$\alpha$ -hydroxyuvitate** (BÖTTINGER), 1881, A., 278.  
**4-hydroxyuvitate** (JACOBSEN), 1881, A., 531.  
**iodacetate**, action of methylic iodide on (ARONSTEIN and KRAMPS), 1881, A., 576.  
**iodide** (*iodomethane*), preparation of (BUTLEROFF), 1873, 1014.  
   action of, on aniline (v. HOFMANN), 1877, ii., 604.  
   action of, on benzylic sulphide (CAHOURES), 1875, 1181.  
   action of the copper-zinc couple on (GLADSTONE and TRIBE), 1873, 678.  
   action of sodium mercaptide on (CLAËSSON), 1877, ii., 293.  
   action of, on sulphur (KLINGER), 1878, A., 128.  
   action of water on (NIEDERIST), 1877, ii., 422; 1879, A., 700.  
   compound of, with thiocarbamide (BERNTSEN and KLINGER), 1878, A., 569.  
   hydrate of (DE FORCRAND), 1881, A., 32.  
   mercury derivative of (SAKURAI), 1880, T., 658; 1881, T., 485.  
**malonate** (OSTERLAND), 1875, 142.  
**mandelate**, melting point of (BREUER and ZINCKE), 1880, A., 645.  
**mesaconate** (PERKIN), 1881, T., 554.  
   molecular refraction of (BRÜHL), 1882, A., 829.  
 **$\alpha$ -methoxybutyrate** (DUVILLIER), 1879, A., 523.  
***o*- $\alpha$ - and - $\beta$ -methoxycinnamates**, refractive indices of, and action of bromine on (PERKIN), 1881, T., 410.  
***p*-methoxycinnamate** (PERKIN), 1881, T., 439.  
***oa*-methoxyphenylacrylate**. See Methylic *oa*-methoxycinnamate.  
***o*- $\alpha$ - and - $\beta$ -methoxyphenylangelates** (PERKIN), 1881, T., 435.  
***o*- $\alpha$ - and - $\beta$ -methoxyphenyl dibromopropionates** (PERKIN), 1881, T., 426.  
***o*- $\alpha$ - and - $\beta$ -methoxyphenylcrotonates** (PERKIN), 1881, T., 429.  
***p*-methoxysalicylate** (TIEMANN and PARRISIUS), 1881, A., 271.



**Methylic** methylaldehydovanillate (*methylic isopianate*) (TIEMANN and MENDELSON), 1877, ii., 487.  
 methyl-*o*-coumarate. See Methylic methoxyennamate.  
 methylpulvate (SPIEGEL), 1881, A., 97.  
 nitrogen chloride. See Methyl*di*-chloramine.  
 $\alpha$ -*d*-nitrophenate (SCHULTZ), 1880, A., 815.  
*p*-nitrophenylacetate (BEDSON), 1880, T., 91; (MAXWELL), 1880, A., 120.  
*d*-nitrosalicylate (SALKOWSKI), 1875, 71.  
 nitroveratrate (MATSMOTO), 1878, A., 501.  
 isonoropianate (*methylic aldehydovanillate*) (TIEMANN and MENDELSON), 1877, ii., 487.  
 isopianate (*methylic methylaldehydovanillate*) (TIEMANN and MENDELSON), 1877, ii., 487.  
 oxalate, action of alcoholic ammonia on (WEDDIGE), 1876, i., 698.  
 $\beta$ -phenyl*di*brompropionate (ANSCHÜTZ and KINNICUTT), 1878, A., 981.  
 phenylthiocarbamate (LIEBERMANN), 1882, A., 298.  
 phenyl-*mono*- and -*di*-thiocarbamates (WILL), 1882, A., 723.  
 phosphanilidosulphonate (LAAR), 1880, A., 321.  
 phosphenylate (MICHAELIS and BENZINGER), 1876, i., 598.  
 isophthalate (v. BAEYER), 1873, 756.  
 propionate, physical properties of (KAHLBAUM), 1879, A., 521.  
 propyl carbonate (RÖSE), 1881, A., 252.  
 pyromellitate (v. BAEYER), 1873, 756.  
 pyruvate (OPPENHEIM), 1873, 377.  
 racemate (ANSCHÜTZ and PICTET; ANSCHÜTZ), 1880, A., 876.  
 santonate (CANNIZZARO), 1877, i., 470.  
 sebate (NEISON), 1876, i., 315.  
 selenicyanates (PROSKAUER), 1875, 144.  
 selenide and its compound with platinum tetrachloride (JACKSON), 1876, i., 580.  
 selenides (JACKSON), 1875, 553; 1876, i., 580.  
 silicate, action of zinc ethyl on (LADENBURG), 1873, 488.  
 sulphate (ORLOWSKY), 1876, ii., 61.  
 preparation of (CLAËSSON), 1879, A., 775; 1880, A., 28.  
 action of ammonia and amines on (CLAËSSON and LUNDAVALL), 1881, A., 240.

**Methylic sulphide.** See Dimethylic sulphide.  
*d*-tartrate (ANSCHÜTZ and PICTET; ANSCHÜTZ), 1880, A., 876.  
 terephthalate, melting point of (BERGER), 1878, A., 152.  
 thioacetate, boiling point of (WALLACH and BLEIBTREU), 1879, A., 786.  
 $\alpha$ - and  $\beta$ -thiocarbamates (BLANKENHORN), 1878, A., 215.  
 thiocyanate, action of methylic iodide on (CAHOURS), 1876, i., 696.  
 polymeric, and the action of alcoholic ammonia on (v. HOFMANN), 1880, A., 797.  
*p*-toluate (FISCHLI), 1879, A., 638.  
*o*- and *p*-tolyl-*mono*- and -*di*-thiocarbamates (*tolylmethyllthiocarbamates*) (WILL and BIELSCHOWSKI), 1882, A., 1090.  
 trimethylamidoacetate, iodide of (KRAUT), 1876, ii., 626.  
 isovalerate (SCHMIDT and SACHTLEBEN), 1879, A., 139.  
 boiling point, density and rotatory power of (PIERRE and PUCHOT), 1873, 1017.  
 2'-Methylindole (*methyllketole*) and its derivatives (JACKSON), 1881, A., 734.  
 synthesis of (v. BAEYER and JACKSON), 1880, A., 395.  
 3'-Methylindole (*scatole*) (BRIEGER), 1878, A., 437; 1880, A., 258.  
 formation of, in the intestines of *Herbivora* (TAPPEINER), 1882, A., 240.  
 preparation of, from indigo (v. BAEYER), 1881, A., 278.  
 empirical formula of (NENCKI), 1880, A., 167.  
 constitution of (OSSIKOWSKY), 1880, A., 473.  
 detection of (BRIEGER), 1882, A., 559.  
 3'-Methylindolecarboxylic acid (E. and H. SALKOWSKI), 1881, A., 175.  
 Methylindyl methyl ketone (*acetyl-methyllketole*) (JACKSON), 1881, A., 734.  
 Methylketole. See 2'-Methylindole.  
 Methyl*para*leucaniline (E. and O. FISCHER), 1880, A., 390.  
 Methylleucaurin (ZULKOWSKI), 1881, A., 901.  
 Methylmalonic acid. See *iso*Succinic acid.  
 Methylmandelic acid and its salts (MEYER and BONER), 1882, A., 195.  
 Methylmellilotic acid. See *o*-Methoxy- $\beta$ -phenylpropionic acid.

- Methylmorphine.** See Codeine under Alkaloids.
- $\beta$ -Methylnaphthalene** (REINGRUBER), 1881, A., 436.
- Methylnitrolic acid** (MEYER), 1874, 365; 1875, 558; (TCHERNIAK), 1875, 560; 1876, i., 903.
- Methyl-orange.** See Helianthin.
- Methylorcinol** (*hydroxymethoxymethylbenzene*) and *dibromo-* (TIEMANN and STRENG), 1882, A., 52.
- Methyloxamethane.** See Ethylic methyloxamate.
- Methyloxamic acid** (FISCHER), 1882, A., 628.
- Methyloxamide** (WALLACH and WEST), 1877, ii., 186.
- Methyloxanthranol** and its derivatives (LIEBERMANN and LANDSHOFF), 1881, A., 608; 1882, A., 861.
- Methylparabanic acid** (MALY and HINTEREGGER), 1881, A., 747; (FISCHER), 1882, A., 628; (MALY and ANDREASCH), 1882, A., 633.  
from dimethyluric acid (MABERY and HILL), 1881, A., 39.  
synthesis of (ANDREASCH), 1881, A., 896.
- Methylpelletierine** (TANRET), 1880, A., 481.
- Methylphenol.** See Cresol.
- Methylphenylamine.** See Methylaniline.
- Methylphenylnitrosamine.** See Methylaniline nitrosamine.
- Methylphenyl-.** See also Phenylmethyl-.
- Methylphosphenylic chloride** (KÖHLER and MICHAELIS), 1877, ii., 451.
- Methylphosphinic chloride.** See Methanephosphonic chloride.
- Methylphthalic acid** (*toluenedicarboxylic acid*) (BLOMSTRAND), 1873, 506.
- Methylisophthalic acid** ( *$\beta$ -xylidenic acid*) (JACOBSEN), 1882, A., 187.
- Methylpiperidine** (v. HOFMANN), 1881, A., 621.
- Methyl-*p*-propenylphenol.** See Anethoil.
- Methylpropylacetic acid.** See Hexoic acid.
- Methylpropylacetylene.** See Hexinene.
- Methylpropylallylene** (*heptinene*) and its glycol (MORRIS), 1882, T., 177.
- Methylpropylallylenic glycol.** See Dihydroxyheptylene.
- Methylpropylbenzene.** See Cymene.
- Methyl-*n*- and -*iso*-propylcarbinols.** See Amylic alcohols.
- Methylpropyl-*m*-cresol** (MAZZARA), 1882, A., 1199.
- s*-Methylpropylethylene.** See  $\beta$ -Hexylene.
- $\beta$ -Methylpropylethyleneolactic acid** and its salts (SEMLIANITZIN), 1880, A., 372; 1881, A., 402.
- Methylpropylphenanthrene.** See Retene.
- Methylisopropylphosphine** (v. HOFMANN), 1873, 883.
- Methylprotocatechuic acid.** See Vanillic acid.
- Methylprotocotoin.** See Oxyleucotin.
- Methylpulvic acid** (SIEGEL), 1881, A., 97.
- 2-Methylpyridine.** See  $\alpha$ -Picoline.
- 3-Methylpyridine.** See  $\beta$ -Picoline.
- 2-Methylpyridine-4-carboxylic acid** (*picoline-4-carboxylic acid*) (BÖTTINGER), 1881, A., 612.
- Methylpyridinecarboxylic acids** (HOOGWERFF and VAN DORP), 1881, A., 611.
- 2-Methylpyridine-4:6-dicarboxylic acid** (*uritic acid*) (BÖTTINGER), 1874, 1159; 1876, i., 566.  
constitution of (BÖTTINGER), 1881, A., 173.
- 4-Methylpyridine-2:3-dicarboxylic acid** (*methylquinolinic acid*) (HOOGWERFF and VAN DORP), 1881, A., 110, 611.
- Methylpyridyl iodide**, action of silver oxide, potassium hydroxide and sodium amalgam on (v. HOFMANN), 1881, A., 921.
- Methylpyrocatechol.** See Guaiacol.
- Methylpyrogallol** (v. HOFMANN), 1880, A., 248.
- 1-Methylpyrroline** (BELL), 1879, A., 525.
- $\alpha$ -Methylpyrroline** (*homopyrrole*) (WEIDEL and CIAMICIAN), 1880, A., 404.  
potassium derivative of, action of melted potash on (CIAMICIAN), 1882, A., 213.  
action of chloroform on (CIAMICIAN and DENNSTEDT), 1881, A., 827.
- $\alpha$ -Methylpyrrolinecarboxylic acid** (CIAMICIAN), 1882, A., 213.
- Methylquinine** and its methiodide (CLAUS and MALLMANN), 1881, A., 619.  
sulphatoperiodides (JÖRGENSEN), 1877, i., 212.
- Methylquinizarin.** See 1:4-Dihydroxy-2-methylantraquinone.
- Methylquinol.** See Toluquinol.
- 2'-Methylquinoline** (*quinulidine*) (KÖRNER), 1882, A., 739; (DOEBNER and v. MILLER), 1882, A., 868.

- 4'-Methylquinoline** (*cincholinoline*; *lepidoline*) and its salts (HOOGWERFF and VAN DORP), 1881, A., 109; (WEIDEL), 1882, A., 533.  
action of sodium on, and nitrate of (WILLIAMS), 1878, A., 432.  
bases isomeric with (SKRAUP), 1881, A., 919.
- 2-Methylquinoline** (*m-toluquinoline*) and its salts (SKRAUP), 1882, A., 1216.
- Methylquinolines** (*toluquinolines*) (SKRAUP), 1881, A., 920.  
three, boiling points and specific gravities of (SKRAUP), 1882, A., 1217.
- 2'-Methylquinoline-4'-carboxylic acid** (*aniluronic acid*) (BÖTTINGER), 1878, A., 673; 1881, A., 278.
- Methylquinolinic acid.** See 4-Methylpyridine-2:3-dicarboxylic acid.
- Methylquinone.** See Toluquinone.
- Methylresorcinol.** See Orcinol.
- Methylresoreyldialdehydes,  $\alpha$ - and  $\beta$ -** (TIEMANN and PARRISIUS), 1881, A., 271.
- Methylrosaniline picrate** (VOGEL), 1879, A., 84.
- Methylrosanilines**, metamorphoses of (GIRARD and WILLM), 1876, ii., 100.
- Methylsalicylaldehyde.** See *o*-Methoxybenzaldehyde.
- Methylsalicylic alcohol.** See *o*-Methoxybenzyl alcohol.
- Methylstilbene** (MANN), 1881, A., 1035.
- Methylsuccinic acid** (*butanedicarboxylic acid*; *hydroxyglutaric acid*; *pyrotartaric acid*) (LEBEDEFF), 1876, ii., 287; (MARKOWNIKOFF), 1877, i., 61; (BÖTTINGER), 1878, A., 32; (KRESSNER), 1878, A., 783; (CLAUS), 1878, A., 855; (DEMARÇAY), 1879, A., 459; 1880, A., 625; 1881, A., 255.  
formation of (BÖTTINGER), 1881, A., 155.  
formation of, from allylic iodide (CLAUS), 1875, 555.  
formation of, from ethylic acetoacetate (CONRAD), 1878, A., 137.  
formation of, from pyruvic acid (BÖTTINGER), 1874, 1159.  
synthesis of, by means of ethylic  $\alpha$ -methylacetylsuccinate (KRESSNER), 1878, A., 783.  
electrolysis of (REBOUL and BOURGOIN), 1877, ii., 442.  
etherification of (MENSCHUTKIN), 1882, A., 383.  
action of bromine on (BOURGOIN), 1878, A., 29.
- Methylsuccinic acid** (*butanedicarboxylic acid*; *hydroxyglutaric acid*; *pyrotartaric acid*), action of phosphorus pentasulphide on (BÖTTINGER), 1879, A., 45.  
transformation of, into tribromethylene hydrobromide (BOURGOIN), 1877, ii., 443.
- Methylsuccinic acid**, bromo-, and its salts (BISCHOFF and GUTHZEIT), 1881, A., 579.  
*dibromo-* [m.p. 102°], conversion of glutaric acid into (REBOUL and BOURGOIN), 1877, ii., 592.  
[m.p. 127°—128°] (BISCHOFF and EMMERT), 1882, A., 1191.  
*mesodibromo-* [m.p. 170°] (MORAWSKI), 1875, 1255; (FITTIG), 1877, ii., 738.  
decomposition of (FITTIG and KRUSEMARK), 1881, A., 416.  
*citradi-bromo-* [m.p. 150°] (FITTIG), 1877, ii., 738.  
decomposition of (FITTIG and KRUSEMARK), 1881, A., 416.
- Methylsuccinic anhydride, citrabromo-** (BOURGOIN), 1878, A., 30.  
*itadibromo-* (PETRI), 1881, A., 1032.
- Methylsuccinimide** (MENSCHUTKIN), 1876, ii., 626.
- Methylsulphanilic acid.** See Methylanilinesulphonic acid.
- Methyltartronic acid**, bromo-, and its salts (v. GERICHEN), 1882, A., 869.
- Methyltartronic acid** (*hydroxyethylidenesuccinic acid*) (BÖTTINGER), 1881, A., 254.
- Methyltaurine and methyltaurocyamine** (DITTRICH), 1879, A., 225.
- Methyltetrahydroquinoline** (JACKSON), 1881, A., 734, 742.
- 1'-Methyltetrahydroquinoline-4'-carboxylic acid** (*1'-methyltetrahydrocinchoninic acid*) and its derivatives (WEIDEL), 1882, A., 532.
- Methylisothioacetanilide** (WALLACH), 1880, A., 557.  
boiling point of (WALLACH and BLEIBTREV), 1879, A., 786.
- Methylthiocarbimide** (v. HOFMANN), 1880, A., 797.
- Methylthioparabanic acid**, synthesis of (ANDREASCH), 1881, A., 896.
- Methylthymol, 6-bromo-** (PATERNO and CANZONERI), 1880, A., 884.  
6-nitro-, action of nitric acid on (PATERNO and CANZONERI), 1880, A., 883.
- $\alpha$ -Methylthymolsulphonic acid** and its salts (PATERNO), 1875, 638.

- Methyl-*p*-toluidine** methyl sulphate (CLAËSSON and LUNDVALL), 1881, A., 241.  
3:5-*dinitro*-, and nitroso- (THOMSEN), 1878, A., 218.
- Methyltoluidines**, preparation of, and colouring matters from (MONNET, REVERDIN and NÖLTING), 1879, A., 310.
- Methyltriisobutylphosphonium** iodide (V. HOFMANN), 1873, 883.
- Methyltriethylamine** methyl sulphate (CLAËSSON and LUNDVALL), 1881, A., 241.
- Methyltriethylphosphonium** chloride and bromide (LETTS), 1882, A., 720.
- Methyltriethylstibine** iodide, absence of rotatory power in (LE BEL), 1877, ii., 734.
- Methyltropine** (LADENBURG), 1882, A., 216.  
iodide, and platinochloride (MERLING), 1882, A., 216.
- $\beta$ -Methyltropine** (LADENBURG), 1882, A., 216.
- Methylumbellic acid**, crystalline form of (PANEbianco), 1880, A., 106.
- Methylumbelliferone** (TIEMANN and REIMER), 1879, A., 721.
- Methyluric acid** (HILL), 1876, ii., 75, 509.
- Methylvanillin** (TIEMANN), 1876, i., 76.  
action of hydrochloric acid on, and oxidation of (BECKETT and WRIGHT), 1876, i., 288.
- Methyl-violet**. See under Colouring matters.
- Methylxanthamide**. See Methyl  $\beta$ -thiocarbamate.
- 4-Methyl-*m*-xylenol** and **2-methyl-*p*-xylenol** (JACOBSEN), 1878, A., 412.
- Miargyrite** (*hyppargyrite*) (SIRÖCZ), 1878, A., 17; (WEISBACH), 1881, A., 362.
- Mica**, a new (HEDDLE), 1881, A., 385.  
from Striegau in Silesia (VOM RATH), 1881, A., 549.  
black, from Tschiborkul in Siberia (ZELLNER), 1874, 553.  
from Vesuvius (V. KOKSCHAROFF), 1876, i., 525; (BERWERTH), 1878, A., 478.  
some physical properties of (KENN-GOTT), 1875, 1170.  
behaviour of, at high temperatures (RAMMELSBURG), 1879, A., 772.  
pseudomorphosis of, into garnet (HELLAND), 1873, 356.  
black, polychroic nuclei of (MICHEL-LÉVY), 1882, A., 811.  
more especially zinnwaldite (BAUMHAUER), 1881, A., 692.
- Mica**, mineralogical examination of (V. KOKSCHAROFF), 1881, A., 524.
- Micas** (GROTH), 1875, 511; (TSCHERMAK), 1878, A., 711; 1880, A., 532; (RAMMELSBURG), 1880, A., 224, 614.  
two, intergrowth of, from Middletown, Connecticut (V. LASAULX), 1879, A., 363.  
chemical composition of (RAMMELSBURG), 1881, A., 533.  
crystallographical and chemical relations of the vermiculites to (COOKE), 1875, 134.  
iron-magnesia- (RAMMELSBURG), 1880, A., 225, 614; 1881, A., 533.  
See also Biotite, Lepidolite, Lepidomelane, Muscovite and Phlogopite.
- Mica-schist**, composition of (RICCIARDI), 1882, A., 1177.
- Mica spherules** from Hermannschlag in Moravia (TSCHERMAK), 1873, 1009.
- Micaceous trap** of Metzdorf, microscopic examination of (KALKOWSKY), 1875, 1170.
- Microbes**, conditions of life of (GUNNING), 1879, A., 664.  
development of, in the absence of free oxygen (HÜFNER), 1876, ii., 322.  
in the air (HANSEN), 1880, A., 908.  
in the air, action of ozone on (CHAPUIS), 1881, A., 632.  
rapidity of diffusion of, in the air (SOYKA), 1880, A., 515.  
mutual transformation of microscopic (DUVAL), 1876, i., 105.  
phosphorescence of (PFLÜGER), 1876, i., 950.  
destruction of, in potable water (LANGFELDT), 1881, A., 1179.  
See also Bacillus, Bacterium, Fermentation, Ferments, Micrococci, and Saccharomyces.
- Microchemistry** as applied to the identification of tea-leaves (BLYTH), 1877, ii., 517.
- Microcline** (SAINT-CLAIRE DEVILLE), 1876, ii., 611.  
occurrence of, near Freistadt, in Upper Austria (SCHARIZER), 1882, A., 580.  
a new species of triclinic felspar with potash base, its optical and crystallographical properties and its chemical composition (DES CLOIZEAUX), 1876, ii., 180.  
action of sodium hydroxide and carbonate on (FLIGHT), 1882, T., 160.  
See also Amazon-stone and Felspar.



- Micrococci**, grains of, in the atmosphere (PHIPSON), 1881, A., 645.
- Microcosmic salt** (*sodium ammonium hydrogen phosphate*), crystallisation of supersaturated solutions of (THOMSON and BLOXAM), 1882, T., 384.
- Microgranite** (SCHUMACHER), 1881, A., 698.
- Microlite** from Amelia Co., Virginia (DUNNINGTON), 1881, A., 1002.
- Micromineralogy** (v. LASAULX), 1873, 257.
- Microsommitte**. See Davyne.
- Microzoa**, relation of oxygen to the life of the (NENCKI), 1879, A., 953.
- Microzoma creta**, non-existence of (CHAMBERLAND and ROUX), 1881, A., 835.
- Microzymes** of an animal at different ages (BÉCHAMP), 1876, i., 94.  
transformation of, into bacteria in the alimentary canal (BÉCHAMP and ESTOR), 1873, 1048.  
of germinated barley and of sweet almonds, as producers of diastase and synaptase (BÉCHAMP), 1877, i., 106.  
of the gastric juice (BÉCHAMP), 1882, A., 752.  
of the gastric glands, and their digestive power (BÉCHAMP), 1882, A., 1118.  
of milk as the cause of its fermentation (BÉCHAMP), 1873, 763, 927.  
reduction of nitric acid and oxidation of acetic acid, with production of alcohol by the influence of (BÉCHAMP), 1876, ii., 540.  
See also Ferments.
- Microzymin** (HERTER), 1882, A., 754.
- Milarite** (FRENZEL), 1874, 448; (LUDWIG), 1879, A., 358.
- Mildew**. See under Mould-fungi.
- Milk, human** (RADENHAUSEN), 1882, A., 758.  
composition of (BRUNNER), 1873, 927; (MARCHAND), 1880, A., 332; (FORSTER), 1881, A., 630; (KRAUCH), 1882, A., 986.  
alkalis and albuminoids in (BUNGE), 1875, 475.  
amount of nitrogen and albumin in (NENCKI), 1876, i., 90.  
enumeration of the fat globules in, as a test for (BOUCHUT), 1880, A., 191.  
analysis of (MUTER), 1873, 537; (GERBER), 1875, 1296; 1881, A., 657; (CHRISTENN), 1878, A., 248.  
estimation of albumin in (GERBER), 1875, 1296; (PULS), 1876, ii., 666.
- Milk, human**, estimation of fat in (LÖWIT), 1874, 1018.  
estimation of sugar in (GSCHIEDLEN), 1878, A., 345.  
See also under Agricultural Chemistry.
- Milk diet**, tissue change on (CAMERER), 1882, A., 636, 749.
- Milk of lime**. See Calcium hydroxide.
- Milk-sugar**. See Lactose under Carbohydrates.
- Millet**, composition of ashes of (PAVESI and ROTONDI), 1875, 178.
- Millet seeds**, composition of (RITTHAUSEN), 1878, A., 240.
- Miloschine** (KENNGOTT), 1873, 853.
- Mimetite** (*mimetesite*) (SILLIMAN), 1881, A., 1109.  
from Långban (LINDGREN), 1882, A., 283.  
See also Lead arsenate.
- Mimosa bark**, action of sulphuric acid on (PAUL and KINGZETT), 1878, T., 219.
- Mimotannic acid** (PAUL and KINGZETT), 1878, T., 219.
- Mineral**, a glassy, which forms on the rocks of the Mediterranean coasts (CLOËZ), 1878, A., 943.  
hygrophilite-like (v. GÜMBEL), 1879, A., 208.
- Minerals**, American (LEEDS), 1874, 28.  
ferruginous, from Amhurst Co., Va., composition of (BAKER), 1881, A., 554.  
Austrian (SCHARIZER), 1881, A., 544.  
from the Silberberg at Bodenmais in Bavaria (VOM RATH), 1881, A., 549.  
Belgian (DE KONINCK), 1873, 1114.  
found in the neighbourhood of Walsch in Bohemia (BOŘICKÝ), 1874, 236.  
from the coal formation of Bohemia, some resembling ankerite, and on the chemical constitution of the minerals classed with ankerite (BOŘICKÝ), 1877, i., 581.  
accompanying the graphite of Mugrau, Bohemia (SCHRAUF), 1877, i., 581; ii., 859.  
contemporaneous formation of, in the thermal waters of Bourbonne-les-Bains (DAUBRÉE), 1875, 1167.  
Brazilian (GORCEIX), 1878, A., 118.  
Canadian (HOFFMANN), 1881, A., 525, 545.  
Caucasian (FRENZEL), 1880, A., 615.  
from Chaponost, near Lyons (BERTRAND), 1882, A., 151.  
from Chili (DOMEYKO), 1876, ii., 492; 1882, A., 471; (STRENG), 1880, A., 301; (VOM RATH), 1881, A., 551; (BERTRAND), 1882, A., 151.

**Minerals**, two new, from Fairfield Co., Connecticut (BRUSH and DANA), 1879, A., 891; 1881, A., 229, 529.  
 Cornish (CHURCH), 1875, 736; (FIELD), 1877, i., 56.  
 from the counties of Dublin and Wicklow (HAUGHTON), 1881, A., 382.  
 from Etna (SILVESTRI), 1876, i., 200; (V. LASAULX), 1882, A., 284.  
 of the Fassathal and Fleinsenthal (DOELTER), 1876, i., 887; 1878, A., 390.  
 from Futuna island (WICHMANN), 1881, A., 701.  
 two, from the Eleonora mine in the Dünsberg, near Giessen (NIES), 1881, A., 525.  
 from Greenland (JANOVSKY), 1874, 136, 237.  
 containing fluorine from Ivigtut, Greenland, crystallographical and chemical investigation of (V. NORDENSKIÖLD), 1876, ii., 384.  
 from Hühnerkobel between Zwiesel and Bodenmais (VOM RATH), 1881, A., 550.  
 Italian (COSSA), 1876, i., 752; (CORSI), 1882, A., 479.  
 from Langban, composition of (LINDSTRÖM), 1882, A., 291.  
 accompanying the brown iron ore of Langenstrieß (FRENZEL), 1876, i., 52.  
 from the province of Lerida (DUCLOUX), 1874, 965.  
 in certain trachytes from the ravine of Riveau Grande, at Mont Dore (GONNARD), 1880, A., 225.  
 from the andesite of Mount Arany (Koch), 1880, A., 616.  
 of Mount Monzoni in south-west Tyrol (VOM RATH), 1875, 1170.  
 in the pegmatite veins of Moos (BRÖGGER), 1882, A., 579.  
 from Zéptau and Schönberg in Moravia (VOM RATH), 1881, A., 550.  
 from the iron mine of Moravieza in the Banat (V. ZEPHAROVICH), 1879, A., 363; 1881, A., 996.  
 from New Caledonia (LIVERSIDGE), 1874, 613.  
 from New South Wales (LIVERSIDGE), 1881, A., 991.  
 from North Carolina (HIDDEN), 1881, A., 1109; (GENTH and KERR), 1882, A., 147.  
 from Nova Scotia (How), 1876, ii., 55.  
 Norwegian, crystallographical examination of (BRÖGGER), 1881, A., 398.

**Minerals** from Orawicza, composition of (JANOVSKY), 1874, 237, 316.  
 occurring with metallic iron in the dolerite from Ovivak (SMITH), 1879, A., 894.  
 of some of the apatite-bearing veins of Ottawa Co., Quebec (HARRINGTON), 1881, A., 542.  
 in the basalt of the Persanyer Gebirge (Koch), 1881, A., 703.  
 from Albergaria Velha, in Portugal (FRENZEL), 1882, A., 473.  
 from Russia (V. KOKSCHAROFF), 1881, A., 523.  
 of the Sarrabus mine, Sardinia (RICHARD), 1881, A., 359.  
 from Silesia (TRIPPE), 1880, A., 19.  
 of the granitic quartz-blocks of the Sierra de Cordoba, South America (STELZNER), 1874, 668.  
 Spanish (MEISSONNIER), 1876, ii., 612; (GENTH), 1881, A., 1110.  
 from Transylvania (VOM RATH), 1881, A., 548.  
 formed by the volcanic vapours of Vesuvius (VOM RATH), 1878, A., 475.  
 of the Island of Vulcano (COSSA), 1878, A., 952.  
 in the Courl mine in Westphalia, occurrence of (MUCK), 1882, A., 20.  
 of the clay group (HELMHACKER), 1881, A., 540.  
 of the cryolite group, chemical composition of (BRANDL), 1882, A., 1176.  
 containing nickel (How), 1878, A., 475.  
 description of various (PISANI), 1877, ii., 850.  
 enclosed in volcanic rocks, remarks on (V. SANDBERGER), 1873, 739.  
 structure of certain (GAUDIN), 1878, A., 843.  
 application of Gaudin's atomic theory to certain (GAUDIN), 1879, A., 602.  
 electric conductivity and polarisation of (DU MONCEL), 1876, i., 29.  
 thermoelectric properties of (SCHRAUF and DANA), 1874, 1129.  
 thermal conductivity of (THOULET), 1882, A., 790.  
 relation of the dispersion of heat in bodies to the structure of (JANNETTATZ), 1876, ii., 39.  
 volume-constitution of certain (SCHRÖDER), 1874, 874.  
 different, two regular intergrowths of (SADEBECK), 1880, A., 855.

**Minerals**, the alkalinity or acidity of certain, as indicated by their reaction with test-paper (SKER), 1873, 1159.

action of iodine, potassium iodide, and citric acid on certain (BOLTON), 1878, A., 941.

action of organic acids on (GROSJEAN), 1877, ii., 358; (BOLTON), 1877, ii., 358; 1881, A., 62, 642.

action of sulphurous acid on (SCHMIDT), 1882, A., 583.

**Minerals**, analysis of (FOUQUÉ), 1873, 477; (FRENZEL), 1874, 445; 1875, 738; 1876, i., 49; 1882, A., 472; (ZELNER), 1874, 533; (V. DINGESTEDT), 1874, 553; (CLARKE), 1877, ii., 916; (HIORTDAHL), 1881, A., 698; (WIK), 1882, A., 286.

use of ammoniacal salts in (DE CLERMONT), 1879, A., 672.

removal of large quantities of sodium chloride from (MUCK), 1880, A., 580.

separation of silica in (ROCHOLL), 1880, A., 745.

containing cinnabar, metacinnabarite, and stibite (HILGER), 1880, A., 588.

containing selenium (NORDSTRÖM), 1881, A., 533.

resembling thorite (COLLIER), 1881, A., 1009.

separation, mechanical, of (DOELTER), 1882, A., 1173.

action of the electromagnet on, and its use for the (DOELTER), 1882, A., 656, 1173; (V. PEBAL), 1882, A., 810.

by means of fused mixtures of lead and zinc chlorides (BRÉON), 1880, A., 511.

solution of density 3.28 suitable for (KLEIN), 1881, A., 1168.

"**Mineral butter**" from the banks of the Irtisch and Yenesai (SCHMIDT), 1874, 1672.

**Mineral cavities**, presence of liquid carbon dioxide in (HARTLEY), 1876, i., 137; ii., 237; 1877, i., 241.

**Mineral oils**. See Petroleum.

**Mineral-springs and -water**. See under Water.

**Mineral tanning** (GOTTFRIEDSEN), 1879, A., 100; (HEINZERLING), 1880, A., 427.

**Mineralisation** of organic remains (DAUBRÉE), 1876, i., 534.

**Mineralogical notes** (VOM RATH), 1873, 250; 1876, ii., 53; 1881, A., 231,

548; (MASKELYNE and FLIGHT), 1874, 101; (SILLIMAN), 1874, 344; 1881, A., 1108; (FRENZEL), 1874, 445; 1875, 738; 1876, i., 49; 1878, A., 708; 1882, A., 472; (PETERSEN), 1874, 450; (KRAUSE), 1876, i., 345; (STRENG), 1880, A., 301; (LASPEYRES), 1881, A., 543.

**Mineralogical-crystallographical notes** (V. LASAULX), 1876, ii., 487; 1877, i., 53; 1881, A., 236; 1882, A., 284.

**Minium**, analysis of (BLUNT), 1875, 1290.

See also Triplumbic tetroxide under Lead.

**Mint**, a new reaction of essence of (ROUCHER), 1875, 371.

*Mio-Mio*. See *Baccharis coriifolia*.

**Mirabilite** from Aussee (V. ZEPHAROVICH), 1879, A., 23.

See also Sodium sulphate.

**Miriquidite** (FRENZEL), 1874, 1140.

**Mirrors**, decorating, by the aid of photography (LECLERC), 1882, A., 247. coating of, with an alloy of gold and platinum (ANON.), 1874, 928.

**Mispickel** (*arsenical pyrites*) (ROSTER), 1878, A., 281.

from Příbram (V. ZEPHAROVICH), 1881, A., 231.

intergrown with iron-pyrites (SADEBECK), 1880, A., 855.

chemical and crystallographical examination of (ÄRZRUNT), 1879, A., 900.

**Mistletoe** (*Viscum album*), chemical examination of (GRANDEAU and BOUTON), 1877, ii., 211, 636. acid ( $\text{CH}_3\text{O}_3\text{OH}$ , m.p. 101°) from (PAWLEWSKY), 1881, A., 441.

**Mixite** (SCHRAUF), 1881, A., 532.

**Molasses**, formation of (ANTHON), 1875, 198.

composition of beetroot and sorghum (CASAMAJOR), 1882, A., 898.

fermentation of (FIEDLER), 1880, A., 931; (NEALE), 1881, A., 770.

products of the dry distillation of the "vinasse" from (VINCENT), 1877, ii., 240, 379; 1879, A., 612; 1880, A., 233.

occurrence of  $\alpha$ -hydroxyglutaric acid in (V. LIPPMANN), 1882, A., 1190.

method of increasing the yield of potassium carbonate from (CAMICHEL and HENRIOT), 1877, ii., 816.

detection of starch-sugar syrup mixed with (CASAMAJOR), 1882, A., 429.

analyses of (BODENBENDER), 1881, A., 1089.

**Molasses**, separation of sugar from. See under Carbohydrates.

**Molasses waste**, product of the distillation of (LAUTH), 1882, A., 1256.

preservation of (ERNST), 1882, A., 651.

recovery of nitrogen from (KISIEL-INSKI), 1882, A., 669.

conversion of, into gas (ERNST), 1882, A., 787.

preparation of a manure from (ANON.), 1881, A., 937.

**Molecular actions** (MOUTIER), 1875, 1153.

attraction. See Affinity.

changes (POST), 1876, i., 388; (MEYER, BARBERI and FORSTER), 1877, ii., 285; (V. JÜPTNER), 1877, ii., 405; 1878, A., 108.

in the fatty and aromatic series (DEMOLE), 1875, 253; 1876, ii., 396.

compounds (FRIEDEL), 1875, 1234; (GEUTHNER), 1877, i., 274.

and atomic compounds (LOSSEN), 1875, 607.

heat. See under Thermochemistry.

refraction and rotation. See under Photochemistry.

volume. See Volumes, molecular.

weights. See Weights, molecular.

**Molecule**, separation of water within the (ROSER), 1882, A., 1045.

**Molecules** of liquid water, distance between the (HERWIG), 1879, A., 194.

trajectory of (CROOKES), 1879, A., 573.

velocity of (WÄCHTER), 1878, A., 642.

**Molybdenite** from Biella (COSSA), 1878, A., 558.

**Molybdenum**, atomic weight of (MEYER), 1874, 132; (RAMMELSBERG), 1878, A., 14.

solution of, in nitric acid (UELSMANN), 1877, ii., 222.

**Molybdenum salts** (ATTERBERG), 1874, 339.

**Molybdenum pentachloride** (PIUTTI), 1880, A., 220.

chlorides (LIECHT and KEMPE), 1874, 26, 132.

fluorides (MAURO and PANEBIANCO), 1882, A., 1171.

dioxide (MAURO and PANEBIANCO), 1882, A., 702.

trioxide (*molybdic anhydride*), action of phosphorus pentachloride on (PIUTTI), 1880, A., 219.

higher oxides of (FAIRLEY), 1877, i., 141.

# **Molybdenum:—**

molybdic acid, recovery of, from filtrates obtained in the estimation of phosphoric acid (MASCHKE), 1874, 117.

sublimed, as an object for the polarising microscope (STIERLIN), 1877, i., 691.

use of, in colouring silk blue (ANON.), 1873, 306.

blue solution of, as a reagent (MASCHKE), 1874, 1176.

compounds of, with arsenic acid (DEBRAY), 1874, 964.

separation of, from phosphoric acid (REICHARDT), 1873, 1260.

silicomolybdic acid and its salts (PARMENTIER), 1881, A., 880; 1882, A., 702.

**Molybdenum, detection and estimation:—**

detection of (MASCHKE), 1874, 1178; 1876, i., 442.

concentrated sulphuric acid as a test for (V. KOBELL), 1876, ii., 554.

estimation, volumetric, of (WERNCKE), 1875, 913; (MAURO and DANESI), 1881, A., 1083; 1882, A., 555.

**Molybdenum glance**, substances which accompany (THÜRACH), 1877, i., 285.

**Molybdic acid**. See under Molybdenum.

**Molybdic anhydride**. See Molybdenum trioxide.

*Monas prodigiosa* and the colouring matter produced from it (HELM), 1876, i., 737.

**Monazite** (*cryptolite*) (RAMMELSBERG), 1878, A., 476; (FISCHER), 1881, A., 991; (HIDDEN), 1881, A., 1109.

from Amelia Co., Virginia (DUNNINGTON), 1882, A., 1175.

artificial formation of (RADOMSKI), 1875, 433.

**Monimolite** (V. NORDENSKIÖLD), 1879, A., 22.

**Mono-**. See under name to which mono- is prefixed.

**Montanite** (BURKART), 1874, 33.

**Montebrasite**. See Amblygonite.

**Monticellite crystals**, occurrence of, in association with anorthite on the Pesmeda Alp on Mount Monzoni in Tyrol (VOM RATH), 1875, 869.

**Montmorillonite** (HELMHACKER), 1881, A., 541.

**Monzonite** of Predrazzo, petrographical constitution of (HANSEL), 1881, A., 27.

**Moorlands**. See Soils under Agricultural Chemistry.

**Mordant** for Turkey-red dyeing (MÜLLER-JACOBS), 1879, A., 187.



- Mordant**, iron, estimation of chlorine, nitrogen oxides and ferrous oxide in (VOHL), 1874, 603.
- Mordanting** woollens with alum (HAVREZ), 1873, 206.
- Mordants**. See also Colouring matters.
- Morin**, maclurin and moritannic acid (LOEWE), 1876, i., 395.
- Moringic acid**, identity of Walter's, with oleic acid (ZALESKI), 1875, 355.
- Moritannic acid**, morin and maclurin (LOEWE), 1876, i., 395.
- Morphine**. See under Alkaloids.
- Mortar**, action of lime on silica in (ROBERTS), 1880, A., 216.  
crumbling of (WOLTERS), 1875, 671.  
of the pyramid of Cheops, composition of (WALLACE), 1874, 928.  
Scott's selenitic (SCHOTT), 1874, 96.
- Morus alba**. See Mulberry tree.
- Mosaic plates** (ANON.), 1874, 1116.
- Mosandrite**, crystal system of (BRÜGGER), 1879, A., 608.
- Mosandrium** (SMITH), 1879, A., 12; (DELAFontaine), 1879, A., 117.
- Moss-gold and moss-silver**, formation of (LIVERSIDGE), 1881, A., 687.
- Mother of pearl**, artificial, manufacture of (FLECK), 1879, A., 996.
- "Moto,"** preparation of (KORSCHIELT), 1879, A., 414.
- Mottramite** (ROSCOE), 1877, i., 445; (SILLIMAN), 1881, A., 1108.
- Mould-fungi**, chemical composition of (SIEBER), 1882, A., 642.  
functions of (MÜNTZ), 1875, 380.  
function and transformation of (BÉCHAMP), 1873, 404; 1878, A., 444.  
emission of hydrogen during the vegetation of (MISSAGHI), 1876, i., 958.  
formation of fat in the growth of (v. NÄGELI and LOEW), 1880, A., 337.  
nutrition of (v. NÄGELI and LOEW), 1881, A., 299; (v. NÄGELI), 1881, A., 1058.  
on bread (ROCHARD and LEGROS), 1873, 85.  
on printed cotton (WITZ), 1876, i., 820.  
effect of, on tartrates (WARINGTON), 1875, 968.  
prevention of, in gum, ink and starch-paste (HIRSCHEBERG), 1873, 100.
- Mucic acid** (LIMPRICHT), 1873, 621; (KLINKHARDT), 1882, A., 498.  
derivatives (KÖTTNITZ), 1873, 163; (FITTIG), 1877, i., 65; (SEELIG), 1879, A., 783; (LICHTENSTEIN), 1881, A., 722; 1882, A., 178.
- Mucilage**. See Gum.
- Mucin**, putrefaction of (WÄLCHLI), 1878, A., 591.  
of *Helix pomatia* (LANDWEHR), 1882, A., 708.
- Mucobromic acetic anhydride** (JACKSON and HILL), 1879, A., 224.
- Mucobromic acid** and its salts (JACKSON and HILL), 1878, A., 402; 1879, A., 244; (HILL), 1881, A., 36.  
formation of, and action of bromine on (LIMPRICHT), 1873, 625.  
action of bromine on (HILL), 1881, A., 36.  
action of baryta water on (JACKSON and HILL), 1878, A., 402.  
relation of dibromopyromucic acid to (TÖNNIES), 1879, A., 918.  
bromo- (JACKSON and HILL), 1879, A., 224.
- Mucobromic aldehyde** (TÖNNIES), 1879, A., 918.
- Mucochloric acid** (DE LA MOTTE), 1880, A., 36.
- Muconic acid** (*muco-lactonic acid*) (LIMPRICHT), 1873, 623.  
dichloro- (LIMPRICHT), 1873, 622; (BELL), 1879, A., 917.
- Mucor racemosus*, alcoholic fermentation produced by (FITZ), 1876, i., 739.
- "Mucus, urinary,"** non-existence of (MÉHU), 1877, ii., 633.
- Mucylin**, a grease for wool (ANON.), 1876, i., 805.
- Mud**, lake, as a manure (ANON.), 1881, A., 1077.  
river, composition of (POTT), 1873, 1214.  
Nile, composition of (KNOR), 1874, 672.  
taken at low water from the Mer Rouge, Mauritius (WARDEN), 1875, 1170.  
sea, manuring with (ANON.), 1882, A., 770.  
composition of (KÖNIG), 1882, A., 551.  
composition of (KÖNIG), 1882, A., 550.
- Mud bath**, at Pignieu in the Schamser valley, Graubünden (HUSEMANN), 1874, 672.
- Mulberry-trees** (*Morus alba*), occurrence of succinic acid in an incrustation on the bark of (GOLDSCHMIEDT), 1882, A., 602.  
disease of (ANON.), 1879, A., 821.
- Munjistin**. See 1:3-Dihydroxyanthraquinonecarboxylic acid.

- Murexan.** See Amidobarbituric acid.
- Murexide**, synthesis of (GRIMAU), 1875, 752; 1879, A., 375, 460.  
dyeing with (KOPP), 1873, 75.
- Murexoin**, synthesis of (MULDER), 1878, A., 786.
- Muriatic acid.** See Hydrochloric acid under Chlorine.
- Murrayin** (HOFFMANN), 1876, ii., 421.
- Muscarine** (KINGZETT), 1877, ii., 628.  
constitution and formation of (SCHMIEDEBERG and HARNACK), 1876, i., 937; 1877, ii., 198.
- Muscle**, some chemical reactions of active and inactive (GRÜTZNER), 1873, 921.  
action of ammonia and its salts, and of hydrocyanic acid on (BRUNTON and CASH), 1881, A., 1058.  
carbonic anhydride from (STINTZING), 1880, A., 330; 1882, A., 539.  
extractives from (DEMANT), 1880, A., 726.  
formation of glycogen in (KÜLZ), 1881, A., 629.  
amount of glycogen in, after death (KÜLZ), 1881, A., 628.  
amount of paralactic acid in (ASTASCHIEWSKY), 1882, A., 539.  
distribution of phosphates in (JOLLY), 1880, A., 275.  
serum-albumin in (DEMANT), 1881, A., 630.  
influence of tetanus on the acids contained in (WARREN), 1882, A., 539.
- Muscovite** (TSCHERMAK), 1880, A., 533.  
crystallographic system of (TSCHERMAK), 1876, ii., 51.  
pseudomorph of, after prosopite and topaz (GEINITZ), 1877, i., 699.  
See also Mica.
- Muscular activity and waste** (KELLNER), 1880, A., 486.  
labour, influence of, on the elimination of nitrogenised decomposition products (OFFENHEIM), 1880, A., 818.  
tissue. See Tissue.
- Mushrooms**, composition of edible (v. LÖSECKE), 1877, i., 338.  
nature of the mineral substances assimilated by (CAILLETET), 1876, ii., 323.  
See also Fungi.
- Must.** See Wine must.
- Mustard**, black and white, analyses of (PIESSE and STANSELL), 1881, A., 205.
- Mustard**, analysis of (LEEDS and EVERHART), 1882, A., 1007.
- Mustard oil.** See Allylthiocarbimide.
- Mustard-seed**, white, glucoside from (WILL and LAUBENHEIMER), 1880, A., 265.
- Myall-wood** (MOELLER), 1877, i., 119.
- Mycoedema aceti*, growth of (HERZEN), 1880, A., 820.
- Mycoedema vini*, growth of, in a saccharine liquid (FREMY), 1873, 83.
- Mycoprotein** (NENCKI and SCHAFFER), 1880, A., 177; (SCHAFFER), 1881, A., 449.
- Myosin**, its preparation, properties, conversion into syntonin, and regeneration from the same (DANILEWSKY), 1882, A., 745.  
vegetable (VINES), 1881, A., 1062.  
See also Proteids.
- Myrcia acris*, oil of the leaves of (MARKOE), 1878, A., 799.
- Myricyl alcohol** and derivatives (v. PIEVERLING), 1877, i., 586.
- Myristamide** (MASINO), 1880, A., 460; (KRAFFT and STAUFFER), 1882, A., 1274.
- Myristanilide** (MASINO), 1880, A., 460.
- Myristic acid** (KRAFFT), 1880, A., 34; (MASINO), 1880, A., 460.
- Myristic aldehyde**, preparation of (KRAFFT), 1880, A., 867.
- Myristicene**, oxidation of, by air (KINGZETT), 1876, i., 243.
- Myristicin**, so-called (FLÜCKIGER), 1875, 91.
- Myristicol**, composition and properties of (WRIGHT), 1873, 550.  
refractive power of (GLADSTONE), 1873, 972.  
action of phosphorus pentachloride and of zinc chloride on (WRIGHT), 1873, 687, 689.
- Myristin and myristolic acid** (MASINO), 1880, A., 460.
- Myristonitrile** (KRAFFT and STAUFFER), 1882, A., 1274.
- Myronic acid** in the seeds of *Brassica Napus* and *B. Rapa* (RITTHAUSEN), 1882, A., 243.  
testing oil cakes for (DIRCKS), 1882, A., 1236.

## N.

- Nacrite**, pseudomorph of, after prosopite (GEINITZ), 1877, i., 700.
- Nagyagite** (SCHRAUF), 1879, A., 898.
- "Nankin" cotton**, colour of (SCHUNCK), 1874, 720.

**Napelline**, Hübschmann's (WRIGHT and LUFF), 1878, T., 335.

**$\alpha$ -Naphthacinnamic acid.** See  $\alpha$ -Naphthylacrylic acid.

**Naphthalene** (CARNELLEY), 1880, T., 706.

formation of (BRUNNER and BRANDENBURG), 1878, A., 667; (TIEFRUNK), 1878, A., 819.

formation of, from turpentine oil (SCHULTZ), 1876, ii., 197.

synthesis of (ARONHEIM), 1873, 632.

pure, preparation of (LUNGE), 1881, A., 1151; 1882, A., 202.

constitution of (WREDEN), 1876, ii., 407; (CLAUS), 1882, A., 1196.

$\alpha$ - and  $\beta$ -positions in (REYERDIN and NÖLTING), 1880, A., 399.

distillation of (NAUMANN), 1878, A., 138.

solubility of, in water (LUTTON), 1876, i., 914.

action of aluminium chloride on a mixture of ethylic chloride and (MARCHETTI), 1881, A., 1041.

action of amyllic chloroxalate on (ROSER), 1881, A., 731.

action of antimony trichloride on (SMITH), 1876, ii., 31; 1877, i., 553; 1879, T., 309; A., 831.

condensation of, with benzhydrol (LEHNE), 1880, A., 478.

action of bromine on (MAGATTI), 1882, A., 203.

action of carbon tetrachloride, carbon disulphide, and chloroform on (SMITH), 1879, T., 229.

action of iodine on, at high temperatures (BLEUNARD and VRAU), 1882, A., 733.

action of hydriodic acid on (WREDEN and DE ŻNATOWICZ), 1877, i., 466.

action of hydrogen dioxide on (LEEDS), 1882, A., 502.

action of phthalic anhydride on (ADOR and CRAFTS), 1879, A., 940.

action of sulphuric acid on (STENHOUSE and GROVES), 1876, ii., 517.

action of tin tetrachloride on (SMITH), 1876, ii., 32; 1877, ii., 555.

*perchlorination* of (SMITH and DAVIS), 1882, T., 413.

oxidation of (BEILSTEIN and KURBATOFF), 1882, A., 63.

colour reaction with antimony and bismuth trichlorides (SMITH), 1879, A., 831.

crystalline molecular compounds of, with antimony trichloride (SMITH), 1879, T., 309; (SMITH and DAVIS), 1882, T., 411.

**Naphthalene,  $\alpha$ -derivatives of** (ATTERBERG), 1877, ii., 623.

**$\beta$ -derivatives of** (JACOBSON), 1881, A., 736.

**derivatives** (GRABOWSKI), 1873, 891; (BATTERSHALL), 1873, 1138;

(LIEBERMANN and DITTLER), 1873, 1232; (ATTERBERG), 1877, i., 466; ii., 623; (GUARESCHI),

1877, i., 712; 1882, A., 734; (SMITH), 1877, ii., 563; (MERZ and WEITH), 1877, ii., 898;

(CLEVE), 1878, A., 153; (GRAEFF), 1881, A., 822; 1882, A., 1212.

constitution of (BEILSTEIN and KURBATOFF), 1882, A., 62.

*di-* and *tetra*-chlorides (WIDMAN), 1877, ii., 899.

*tetrachloride* (FISCHER), 1878, A., 676, 888; (ATTERBERG), 1878, A., 887.

decomposition of (KRAFFT and BECKER), 1876, ii., 518.

derivatives of (GRIMAUD), 1873, 69, 1034.

**Naphthalene, amido-**. See Naphthylamine.

*diamido-*. See Naphthylenediamine.

$\alpha$ -bromo-, nitration of (LABHARDT), 1879, A., 721.

oxidation of (BEILSTEIN and KURBATOFF), 1879, A., 807; 1882, A., 63.

$\beta$ -bromo- (PALM), 1876, ii., 206; (LIEBERMANN), 1877, i., 607.

1:3-*di*bromo- (MELDOLA), 1880, A., 260.

1:4-*di*bromo- (GUARESCHI), 1877, i., 713; 1882, A., 734.

1:4'-*di*bromo- (MAGATTI), 1882, A., 203; (GUARESCHI), 1882, A., 734.

1:4, 1:4'- and 1:(?)-*di*bromo- (JOLIN), 1877, ii., 901.

bromocyano- [m.p. 147° and 149°] (HAUSMAN), 1877, i., 318.

4:2-bromonitro- (LIEBERMANN), 1877, i., 606.

bromonitro- [m.p. 127°·5] (GUARESCHI), 1882, A., 735.

bromo-*di*- and -*tri*-nitro- (LABHARDT), 1879, A., 722.

$\alpha$ -chloro- (ATTERBERG), 1876, i., 915; ii., 516.

$\beta$ -chloro- (PALM), 1876, ii., 206; (RIMARENKO), 1876, ii., 297;

(LIEBERMANN), 1877, i., 607; (CLEVE), 1878, A., 154.

$\alpha$ - and  $\beta$ -chloro-, action of chlorine on (WIDMAN), 1880, A., 47.

chloro-, *di*- and *tetra*-chlorides of (FISCHER), 1878, A., 766.

- Naphthalene**, chloro-, *tetrachlorides* of (WIDMAN), 1877, ii., 900; (ATTERBERG and WIDMAN), 1877, ii., 901.
- dichloro-* [m.p. 94°] (CLAUS and OEHLER), 1882, A., 736.
- 1:4'-*dichloro-* (CLEVE), 1877, i., 467.
- 1:1', 1:4' and 1:4'-*dichloro-* and 1:4:4'-*trichloro-* (ATTERBERG), 1877, i., 466.
- 1:4- and 1:4'-*dichloro-* and 1:4:4'-*trichloro-* (ATTERBERG), 1877, i., 85.
- 1:4'-*dichloro-*, 1:3:4'-*trichloro-* and *tetrachloro-* (ATTERBERG), 1876, i., 915.
- 2:2' and 2:3'-*dichloro-* (CLEVE), 1877, i., 208; 1878, A., 154.
- derivatives of (ALÉN), 1882, A., 409.
- 2:3'-*dichloro-* (CLAUS and ZIMMERMANN), 1881, A., 915.
- from  $\beta$ -naphtholsulphonic acid (CLAUS and DEHNE), 1882, A., 734.
- dichloro-*, isomeric (WIDMAN), 1877, ii., 900.
- di-* and *tri-chloro-*, *di-* and *tetrachlorides* of (ATTERBERG and WIDMAN), 1878, A., 321.
- 1:3:4'-*trichloro-* (WIDMAN), 1877, ii., 901; 1880, A., 167.
- 1:4:3'-*trichloro-* (WIDMAN), 1877, ii., 901; 1879, A., 723; (CLEVE), 1878, A., 736; 1880, A., 47.
- trichloro-* [b.p. above 30°] (ATTERBERG), 1876, ii., 516.
- trichloro-*, isomeric (WIDMAN), 1877, ii., 901.
- tetrachloro-* [m.p. 141°] (ATTERBERG and WIDMAN), 1878, A., 322.
- tetrachloro-* [m.p. 180°] and *pentachloro-* [m.p. 177°] (ATTERBERG and WIDMAN), 1877, ii., 901; 1878, A., 322.
- tetrachloro-*, isomeric (WIDMAN), 1877, ii., 901.
- pentachloro-* (WIDMAN), 1877, ii., 901.
- 1:2:3:4:4'-*pentachloro-*, oxidation of (CLAUS and SPRUCK), 1882, A., 1210.
- 4:1-chloronitro-, 1':1:4'- and 4:1':1'-chlorodinitro-, and 4:1':1'-*dichloronitro-* (ATTERBERG), 1876, ii., 516.
- 4:1-chloronitro-, 1:4:1'-*dichloronitro-*, 1':1:4'-chlorodinitro-, 1:4'- and 1:1'-*dinitro-*, action of phosphorus pentachloride on (ATTERBERG) 1877, i., 85.
- 4:2':1'-*dichloronitro-* (CLEVE), 1878, A., 736.
- Naphthalene**, 1':4':1'-*dichloronitro-* and 1:3'-*dichlorodi-* and *-tri-nitro-* (WIDMAN), 1880, A., 47.
- 4:1'-*dichlorodinitro-* (ATTERBERG), 1877, i., 466.
- dichloronitro-*, *dichloro-di-* and *-tri-nitro-* (ALÉN), 1882, A., 409.
- tetrachloronitro-* (ATTERBERG and WIDMAN), 1878, A., 322.
- $\alpha$ -cyano-. See  $\alpha$ -Naphthodinitrile.
- 2:2'- and 2:3'-*dicyano-* (EBERT and MERZ), 1876, ii., 409.
- $\beta$ -iodo- (JACOBSON), 1881, A., 736.
- $\alpha$ -nitro- (LIEBERMANN and DITTLER), 1873, 1232; (BEILSTEIN and v. KUHMBERG), 1874, 159.
- action of chlorine on (ATTERBERG), 1876, i., 915; ii., 516.
- oxidation of (BEILSTEIN and KURBATOFF), 1879, A., 722; 1882, A., 63.
- 1:3'-*dinitro-* (LIEBERMANN and HAMMERSCHLAG), 1876, ii., 80.
- 1:4'-*dinitro-*, oxidation of (BEILSTEIN and KURBATOFF), 1880, A., 477.
- 1:4'- and 1:1'-*dinitro-* (BEILSTEIN and v. KUHMBERG), 1874, 159.
- oxidation of, by nitric acid (BEILSTEIN and KURBATOFF), 1881, A., 435; 1882, A., 63.
- trinitro-*, isomeric (BEILSTEIN and v. KUHMBERG), 1873, 69, 1138; 1874, 160; (D'AGUIAR), 1873, 174.
- tetranitro-* [m.p. 200°] (BEILSTEIN and v. KUHMBERG), 1873, 1138.
- tetranitro-* [m.p. 259°] (D'AGUIAR), 1873, 174; (BEILSTEIN and v. KUHMBERG), 1873, 1138; 1874, 160.
- nitroso- (v. BAeyer), 1875, 452.
- Naphthalene-*p*-azo- $\alpha$ -naphthol** (FRANKLAND), 1880, T., 752.
- $\alpha$ -Naphthaleneazonaphthylenediamine hydrochloride** (STEBBINS), 1880, A., 715; 1881, A., 42.
- Naphthalene- $\alpha$ -carboxylic acid**. See  $\alpha$ -Naphthoic acid.
- Naphthalene-1:1'-dicarboxylic acid** (*naphthalic acid*) and its anhydride and imide (BEHR and VAN DORP), 1873, 632; 1874, 1167.
- Naphthalene-2:2'- and 2:3'-dicarboxylic acids** (EBERT and MERZ), 1876, ii., 409.
- Naphthalene-2:2'- and 2:3'-disulphonic acids** and their derivatives (EBERT and MERZ), 1876, i., 262; ii., 408.
- Naphthalene-group**, experiments to determine the  $\alpha$ -position in the (LIEBERMANN), 1877, i., 599.
- Naphthalenephosphinic acid** (KELBE), 1879, A., 67.



- Naphthalenephosphonic acid** (KELBE), 1876, ii., 525.
- Naphthalene-potassium**, action of ethylic bromide on (ABELJANZ), 1873, 382.
- Naphthalene-red**. See Magdala-red under Colouring matters.
- Naphthalene-series**, laws of substitution in the (ARMSTRONG and GRAHAM), 1881, T., 133.  
volumes of some compounds of the (RAMSAY), 1881, T., 63.
- Naphthalenesulphonic acids**,  $\alpha$ - and  $\beta$ - (GESSNER), 1877, i., 315.
- Naphthalene-3-sulphonamide**, 1-nitro- (CLEVE), 1878, A., 154.
- Naphthalene-2'-sulphonamide**, 1-nitro- (CLEVE), 1880, A., 47.
- $\alpha$ -Naphthalenesulphonic acid** (JOLIN), 1877, ii., 902.
- Naphthalenesulphonic acids**,  $\alpha$ - and  $\beta$ -, amides of (CARLSON), 1877, ii., 490.  
oxidation of (BEILSTEIN and KURBATOFF), 1882, A., 63.
- Naphthalene-4-sulphonic acid**, 1-bromo- (MELDOLA), 1880, A., 260.
- Naphthalene-2'-sulphonic acid**, 1-nitro- ( $\delta$ -) and its derivatives and salts (CLEVE), 1878, A., 676; 1880, A., 47.
- Naphthalene-3'-sulphonic acid**, 1:4-dichloro- and its salts (WIDMAN), 1879, A., 722.  
1-nitro- (CLEVE), 1878, A., 154.
- Naphthalene-4'-sulphonic acid**, 1:3-dichloro-, and its salts (WIDMAN), 1880, A., 168.  
1-nitro- and its amido-acid (CLEVE), 1878, A., 153.  
action of sodium amalgam on (CLAUS and GRAEFF), 1878, A., 73.
- $\alpha$ -Naphthalenesulphonic chloride**, *tetrachloride* of, and the action of chlorine on (WIDMAN), 1880, A., 167.
- $\beta$ -Naphthalenesulphonic chloride** (CLEVE), 1878, A., 154.  
*tetrachloride* of, and its constitution (WIDMAN), 1879, A., 723.
- Naphthalene-2-sulphonic chloride**, 1-nitro- ( $\delta$ -) (CLEVE), 1878, A., 676; 1880, A., 47.
- Naphthalene-3'-sulphonic chloride**, 1:4-dichloro- (WIDMAN), 1879, A., 723.  
1-nitro- (CLEVE), 1878, A., 154.
- Naphthalene-4'-sulphonic chloride**, 1:3-dichloro- (WIDMAN), 1880, A., 168.
- Naphthalenetetrasulphonic acid**, and its salts (SENHOFER), 1876, i., 587; 1882, A., 624.
- Naphthalic acid** ( $C_{10}H_8(OH)O_2$ ). See 2-Hydroxy- $\alpha$ -naphthaquinone.
- Naphthalic acid** ( $C_{10}H_6(COOH)_2$ ). See Naphthalenedicarboxylic acid.
- $\beta$ -Naphthamidine hydrochloride** (PINNER and KLEIN), 1879, A., 48.
- Naphthaquinol** (ZINCKE), 1880, A., 49.
- $\alpha$ -Naphthaquinol**, preparation of (PLIMPTON), 1880, T., 635.
- $\beta$ -Naphthaquinol** (GROVES), 1873, 210.
- $\alpha$ -Naphthaquinoline** (SKRAUP), 1881, A., 920.
- $\alpha$ -Naphthaquinone** (LIEBERMANN), 1877, i., 605; (MILLER), 1881, A., 1041; (CLAUS and OEHLER), 1882, A., 737.  
formation of, by oxidation of acetone-naphthylene-*p*-diamine (LIEBERMANN and DITTLER), 1873, 1232.  
formation of, by direct oxidation of naphthalene (GROVES), 1873, 209.  
preparation of (PLIMPTON), 1880, T., 634; (JAPP and MILLER), 1881, T., 220; (LIEBERMANN), 1882, A., 203.  
action of ammonia and the amines on (PLIMPTON), 1880, T., 633; (ZINCKE), 1880, A., 48.  
action of benzoic acid on (JAPP and MILLER), 1881, T., 220.  
derivatives of (DIEHL and MERZ), 1878, A., 322, 888.  
diphenylamine-derivative of, action of reducing agents on (PLIMPTON), 1880, T., 645.
- $\alpha$ -Naphthaquinone**, 2:3-dibromo- (DIEHL and MERZ), 1878, A., 736.  
 **$\beta$ -dichloro-**, action of amines on (PLAGEMANN), 1882, A., 973.  
2:3-dichloro-, action of ammonia and amines on (v. KNAPP and SCHULTZ), 1882, A., 510.  
2:3:1'-trichloro- (CLAUS and SPRUCK), 1882, A., 1211.
- $\beta$ -Naphthaquinone** (STENHOUSE and GROVES), 1877, ii., 52; 1878, T., 415; (MILLER), 1881, A., 1041.  
and some of its derivatives, formation and constitution of (LIEBERMANN and JACOBSON), 1882, A., 521.  
constitution of (JACOBSON), 1882, A., 204.  
action of amines on (ZINCKE), 1881, A., 915; 1882, A., 735, 967.  
compounds of, with toluidine and ethylaniline (ELSBACH), 1882, A., 853.
- 3-nitro-** (STENHOUSE and GROVES), 1878, T., 416.
- $\alpha$ -Naphthaquinoneanilide** and its derivatives (BALTZER), 1882, A., 204.  
preparation of (PLIMPTON), 1880, T., 635.

- $\alpha$ -Naphthaquinoneanilide**, conversion of  $\beta$ -naphthaquinoneanilide into (LIEBERMANN), 1881, A., 1041.  
 action of zinc and hydrochloric acid on (PLIMPTON), 1880, T., 637.  
 chloro- and its derivatives (PLAGEMANN), 1882, A., 973.
- $\beta$ -Naphthaquinoneanilide**, and its salts (ZINCKE), 1881, A., 915; 1882, A., 735; (LIEBERMANN and JACOBSON), 1882, A., 522.  
 conversion of, into  $\alpha$ -naphthaquinoneanilide (LIEBERMANN), 1881, A., 1041.  
 ethereal derivatives of (ZINCKE), 1882, A., 735.
- $\alpha$ -Naphthaquinone-*p*-bromanilide**, chloro- (PLAGEMANN), 1882, A., 973.
- $\alpha$ -Naphthaquinonechlorimide** (HIRSCH), 1881, A., 164.
- $\beta$ -Naphthaquinonedianilide**, and its derivatives (ZINCKE), 1882, A., 967.
- $\beta$ -Naphthaquinone-ethyl-anilide** (ELSBACH), 1882, A., 854.
- $\alpha$ -Naphthaquinoneimide**, amido-, hydrochloride, action of *o*- and *p*-toluidine on (GOËS), 1880, A., 399.
- $\alpha$ -Naphthaquinonenitrilanilides**, chloro- (PLAGEMANN), 1882, A., 973.
- Naphthaquinoneoxime**, 1:2- and 1:4- (*nitroso- $\alpha$ -naphthol*) (LIEBERMANN), 1875, 1023; (FUCHS), 1876, i., 247.
- 2:1-Naphthaquinoneoxime** (*nitroso- $\beta$ -naphthol*) (STENHOUSE and GROVES), 1877, ii., 47.
- $\alpha$ -Naphthaquinonephenylenediamine** (BALTZER), 1882, A., 205.
- $\alpha$ -Naphthaquinonephenylhydrazide**.  
 See Benzeneazo- $\alpha$ -naphthol under Azo.
- $\alpha$ -Naphthaquinonetoluidides** and their derivatives (PLAGEMANN), 1882, A., 974.
- $\beta$ -Naphthaquinone-*p*-toluidide** and its salts (LIEBERMANN and JACOBSON), 1882, A., 522; (ZINCKE), 1882, A., 736.
- Naphthaquinonetoluidides**,  $\alpha$ - and  $\beta$ - (ELSBACH), 1882, A., 854.
- $\alpha\beta$ -Naphthazine** (*azonaphthalene*) (KLOBUKOWSKI; DOER), 1877, ii., 623.
- $\beta$ -Naphthimido-acetate** and *-isobutyl* and *-ethylether* (PINNER and KLEIN), 1879, A., 48.
- Naphthionic acid**. See  $\alpha$ -Naphthylaniline-4-sulphonic acid.
- $\alpha$ -Naphthoic acid** (*naphthalene- $\alpha$ -carboxylic acid*), *mono*- and *tetra*-bromo- (HAUSAMANN), 1877, i., 318.  
 4'-nitro- (GRAEFF), 1881, A., 822; 1882, A., 1212.
- $\alpha$ -Naphthoic acid** (*naphthalene- $\alpha$ -carboxylic acid*), 1'- and 4'-nitro- (EKSTRAND), 1880, A., 261.
- $\beta$ -Naphthoic acid** (HAUSAMANN), 1876, i., 599; (VIETH), 1876, ii., 86.  
*mono*-, *tri*- and *tetra*-bromo- (HAUSAMANN), 1877, i., 319.  
 nitro- [m.p. 220° and 280°] (EKSTRAND), 1880, A., 261.  
 reduction of (v. RAKOWSKI), 1873, 391.
- Naphthoic acids**,  $\alpha$ - and  $\beta$ -, and their anhydrides and derivatives (HAUSAMANN), 1877, i., 317.
- Naphthol**, action of oxalic and sulphuric acids on (HÖNIC), 1881, A., 280.
- $\alpha$ -Naphthol**, action of lead oxide on phenol and (GRAEBE and KNECHT), 1880, A., 664.  
 action of pyromellitic acid on (GRABOWSKI), 1874, 64.  
 oxidation of (DIANIN), 1874, 802.  
 aluminium derivative of (GLADSTONE and TRIBE), 1882, T., 16.  
 4-amido- (LIEBERMANN), 1877, i., 603.  
*tri*amido- (EKSTRAND), 1878, A., 508.  
*tri*amido- and its stannosochloride and sulphate, and amido*di*imido-, and its chromate and hydrochloride (DIEHL and MERZ), 1879, A., 251.  
 4:2-bromonitro- (BIEDERMANN and REMMERS), 1874, 802.  
 4-chloro- (CLAUS and OEHLER), 1882, A., 736.  
*di*imido-. See Naphthaquinoneimide, amido-.
- 2- and 4-nitro- (LIEBERMANN), 1875, 1023; 1877, i., 602.
- 4-nitro- and its salts (BIEDERMANN), 1874, 160.  
 action of phosphorus *pentachloride* on (ATTERBERG), 1877, i., 85.  
 2:4-*di*nitro- (CLEVE), 1877, i., 208.  
*tri*nitro- (*naphthopicric acid*), and its derivatives (MERZ and WEITH), 1877, ii., 898; (EKSTRAND), 1878, A., 508; (DIEHL and MERZ), 1879, A., 250; (LABHARDT), 1879, A., 722.
- $\beta$ -Naphthol** (LIEBERMANN), 1877, i., 607.  
 constitutional formula of (DIEHL and MERZ), 1879, A., 251.  
 reactions of (GRAEBE), 1881, A., 177.  
 action of chloroform on (ROUSSEAU), 1882, A., 735, 1211, 1299; (KAUFFMANN), 1882, A., 1068.  
 action of phosphorus *pentachloride* on (CLEVE and JUHLIN-DANXFELDT), 1876, ii., 81.  
 action of commercial trimethylamine on (HANTZSCH), 1881, A., 177.

- $\beta$ -Naphthol**, colouring matters obtained by the action of, on diazoazobenzene (NIETZKI), 1880, A., 664.  
 aluminium derivative of (GLADSTONE and TRIBE), 1881, T., 10; 1882, T., 15.  
 1-amido- (JACOBSON), 1881, A., 736.  
 preparation of (LIEBERMANN and JACOBSON), 1882, A., 522.  
 1-bromo- and *tetrabromo*- (SMITH), 1879, T., 789; A., 722.  
 3'-chloro- (CLAUS and ZIMMERMANN), 1881, A., 915.  
 from  $\beta$ -naphtholsulphonic acid (CLAUS and DEHNE), 1882, A., 734.  
 1-iodo- (MELDOLA), 1881, T., 47.  
 1-nitro- (STENHOUSE and GROVES), 1877, ii., 51; (JACOBSON), 1881, A., 736.
- Naphthols**,  $\alpha$ - and  $\beta$ -, action of ethylic chloroformate on (BENDER), 1881, A., 48.  
 action of ferric chloride on (DIANIN), 1874, 262.  
 conversion of, into  $\alpha$ - and  $\beta$ -naphthylamines (CALM), 1882, A., 972.  
 preparation of colouring matters by the action of diazo-anisols on (ANON.), 1882, A., 124.  
 nitroso-. See Naphthaquinoneoxime.  
 derivatives of (MARCHETTI), 1880, A., 260; (KOELLE), 1881, A., 177.  
 ethers of (LIEBERMANN and HAGEN), 1882, A., 1212.
- Naphtholazobenzenesulphonic acid**. See *p*-Sulphobenzenazo- $\beta$ -naphthol.
- $\beta$ -Naphtholazohippuric acid** (GRIESS), 1882, A., 50.
- $\beta$ -Naphthol-3:3'- and -1':3'-disulphonic acids** (GRIESS), 1881, A., 178.  
 barium salt of, action of bromine on (ARMSTRONG and GRAHAM), 1881, T., 139.
- $\beta$ -Naphthoetherdisulphonic acid**. See Dinaphthyloxidedisulphonic acid.
- $\alpha$ -Naphthol-2-sulphonic acid**, action of phosphorus *pentachloride* on (CLAUS and OEHLER), 1882, A., 736.
- $\beta$ -Naphthol-3'-sulphonic acid**, from  $\beta$ -naphthol and from naphthalenedisulphonic acid (ARMSTRONG and GRAHAM), 1881, T., 135.  
 action of diazoamidoazobenzene on (VIGNON and BOASSON), 1880, A., 717.  
 action of phosphorus *pentachloride* on (CLAUS and ZIMMERMANN), 1881, A., 914.
- $\beta$ -Naphthol-3'-sulphonic acid**, *dichloro*-naphthalene and chloronaphthol from (CLAUS and DEHNE), 1882, A., 734.  
 ammonium salt of (MELDOLA), 1881, T., 41.  
 barium and calcium salts of (ARMSTRONG and GRAHAM), 1881, T., 135.  
 potassium salt of, and the action of bromine, chlorine, and nitric acid on (ARMSTRONG and GRAHAM), 1881, T., 136.
- Naphthol-3'-sulphonic acids**,  $\alpha$ - and  $\beta$ - (CLAUS and DEHNE), 1882, A., 734.
- Naphtholsulphonic acids**, preparation of colouring matters by the action of diazo-anisols on (ANON.), 1882, A., 124.
- $\alpha$ -Naphthol-2'-sulphonic acid**, 2:4-di-amido-, *däimido*-, 2:4-dinitro-, and nitramido- (LAUTERBACH), 1882, A., 63.
- $\beta$ -Naphthol-3'-sulphonic acid**, 1-amido- (MELDOLA), 1881, T., 47.  
*mono*- and *di*-bromo-, calcium and potassium salts of (ARMSTRONG and GRAHAM), 1881, T., 137.  
 1-nitroso-, and its salts, constitution and reactions of (MELDOLA), 1881, T., 40; A., 436.
- $\alpha$ -Naphthol-2-sulphonic chloride** (CLAUS and OEHLER), 1882, A., 736.
- $\beta$ -Naphtholtetrazobenzene**. See Benzeneazobenzeneazo- $\beta$ -naphthol.
- $\beta$ -Naphthol-violet** and its hydrochloride, and lenceo-base from (MELDOLA), 1881, T., 38.
- Naphthonitrile**, chlorination of (MERZ, ZETTER, RUOFF and MOË), 1879, A., 721.
- $\alpha$ -Naphthonitrile** ( *$\alpha$ -cyanonaphthalene*) (WEITH), 1873, 1241; (GRAEFF), 1881, A., 822.  
 4'-nitro- (GRAEFF), 1881, A., 822.
- Naphthopieric acid**. See  $\alpha$ -Naphthol, *trinitro*-.
- Naphthoxides**,  $\alpha$ - and  $\beta$ -, aluminium (GLADSTONE and TRIBE), 1881, T., 10; 1882, T., 15.
- $\beta$ -Naphthoxylaldehyde**. See 2-Hydroxy- $\alpha$ -naphthaldehyde.
- Naphthoylbenzoic acid** (ADOR and CRAFTS), 1879, A., 940.
- Naphthoxylcarboxylic acid**. See 2-Hydroxy- $\alpha$ -naphthoic acid.
- Naphthyl benzyl ketone**. See Benzyl naphthyl ketone.
- $\alpha$ -Naphthyl ether**. See Di- $\alpha$ -naphthyllic oxide.

- Naphthyl ethyl ethers,  $\alpha$ - and  $\beta$ -** See  $\alpha$ - and  $\beta$ -Ethoxynaphthalenes.
- $\alpha$ -Naphthyl methyl ether.** See  $\alpha$ -Methoxynaphthalene.
- Naphthylacetamide (TOMMASI),** 1873, 1040.
- $\alpha$ -Naphthylacrylic acid ( *$\alpha$ -naphthacinamic acid*),** synthesis of (LUGLI), 1882, A., 205.
- Naphthylamine (*amidonaphthalene*),** electrolysis of (GOPPELSROEDER), 1876, ii., 308.  
 action of benzylic chloride on (FROTÉ and TOMMASI), 1873, 1147.  
 action of ethylic oxalate on (BALLÓ), 1873, 913.  
 action of hydrogen dioxide on (LEEDS), 1882, A., 502.  
 $\alpha$ -nitro-, diazo-derivative of ("*nitr-amidodinaaphthylimide*") (LIEBERMANN and DITTLER), 1873, 1232.
- $\alpha$ -Naphthylamine from naphthol (MERZ and WEITH),** 1881, A., 605; 1882, A., 179; (CALM), 1882, A., 972.  
 conversion of, into  $\alpha$ -naphthyl methyl oxide (HANTZSCH), 1880, A., 813.  
 bisulphite, action of aldehydes on (PAPASOGLI), 1874, 274.  
 platinoecyanide (SCHOLZ), 1881, A., 708.
- $\alpha$ -Naphthylamine, 2:4-dibromo- (MELDOLA),** 1880, A., 260.  
 4:2-bromonitro- (LIEBERMANN), 1877, i., 606.  
 chloro- [m.p. 98°] (SEIDLER), 1878, A., 983.  
 4:2'-dichloro- (CLEVE), 1878, A., 736.  
 2-nitro-, formation of, from  $\alpha$ -nitro-acetonaphthalide (LIEBERMANN and DITTLER), 1873, 1232.  
 4-nitro- (LIEBERMANN), 1877, i., 599.  
 4'-nitro- (BEILSTEIN and V. KÜHLBERG), 1874, 160.  
 2:4-dinitro- (LIEBERMANN and HAMMERSCHLAG), 1876, ii., 80.  
 trinitro- (STAEDEL), 1881, A., 724.
- $\beta$ -Naphthylamine (LIEBERMANN and SCHEIDING),** 1876, i., 403; (SCHEIDING), 1876, i., 713; (PALM), 1876, ii., 206; (LIEBERMANN), 1877, i., 605; (MERZ and WEITH), 1880, A., 813; 1881, A., 605; 1882, A., 179; (CALM), 1882, A., 972.  
 action of chloroacetic acid on (COSINER), 1881, A., 606.  
 derivatives of (COSINER), 1881, A., 605.  
 nitrate (JACOBSON), 1881, A., 736.  
 1-bromo- (COSINER), 1881, A., 606.  
 trinitro- (STAEDEL), 1881, A., 724.
- $\alpha$ -Naphthylamine-4-sulphonic acid (*naphthionic acid*)** and its salts (CLEVE), 1877, i., 208; (NEVILLE and WINTHER), 1880, T., 632.  
 transformation of, into *dibromonaphthalene* (JOLIN), 1877, ii., 902.
- $\alpha$ -Naphthylamine-2'-sulphonic acid (CLEVE),** 1878, A., 677.
- Naphthylaminesulphonic acids** (SCHMIDT and SCHAAL), 1875, 269.
- Naphthylarsonic acid (KELBE),** 1879, A., 68.
- Naphthylazosalicylic acid.** See Hydroxycarboxybenzenazonaphthalene.
- Naphthylbenzamidine (*benzenynaphthylamidine*) (BERNTSEN and TROMPETTER),** 1879, A., 147.
- $\alpha$ -Naphthylcarbamide (PAGLIANI),** 1879, A., 723.
- $\beta$ -Naphthylcarbamide (COSINER),** 1881, A., 606.
- $\alpha$ -Naphthyldiethylamine,** its preparation and reactions, and nitroso- (SMITH), 1882, T., 180.
- Naphthyldiethylphosphine (KELBE),** 1879, A., 68.
- $\alpha$ -Naphthyldimethylamine** and its methiodide (LANDSHOFF), 1878, A., 587.
- $\beta$ -Naphthyldimethylamine** and its methylhydroxide (HANTZSCH), 1880, A., 813; 1881, A., 177.
- Naphthylene-1:4-diamine (LIEBERMANN),** 1877, i., 601.
- Naphthylene-1:4'- and -1:1'-diamines** and their derivatives (D'AGUIAR), 1874, 699; (LADENBURG), 1879, A., 232.
- $\alpha$ -Naphthylethenylamidine (BERNTSEN and TROMPETTER),** 1879, A., 147.
- $\alpha$ -Naphthylethylamine (BERNTSEN and TROMPETTER),** 1879, A., 147.
- $\alpha$ -Naphthyllic ethylic carbonate (BENDER),** 1881, A., 48.
- $\beta$ -Naphthyllic orthophosphate, chloro- (CLAUS and ZIMMERMANN),** 1881, A., 915.
- $\alpha$ -Naphthylmethylamine (LANDSHOFF),** 1878, A., 587.
- $\alpha$ -Naphthylloxamic acid (BALLÓ),** 1873, 913.
- Naphthylphenyl-.** See Phenyl-naphthyl-.
- Naphthylphosphinic acid.** See Naphthalenephosphonic acid.
- Naphthylphosphorous acid.** See Naphthalenephosphinic acid.
- Naphthylsulphuric acid (NIETZKI),** 1882, A., 736.



- $\alpha$ -Naphthylthiocarbamide** (DE CLERMONT and WEHRLIN), 1877, i., 70.
- $\beta$ -Naphthylthio-carbimide and -urethane** (COSINER), 1881, A., 606.
- Naphthyltriethylphosphonium iodide** (KELBE), 1879, A., 68.
- $\beta$ -Naphthylurethane** (COSINER), 1881, A., 606.
- Narceine and narcotine.** See under Alkaloids.
- Narcotic plants, extracts of** (BRETET), 1880, A., 425.
- Naringin.** See under Glucosides.
- Nartic acid** (*nartine*) (v. GERHARTEN), 1881, A., 445; 1882, A., 870.
- Nascent state** (BERTHELOT), 1879, A., 864.
- Nasturtium officinale.*** See Watercress.
- Nataloin** (TILDEN), 1875, 1270.
- Natrolite**, crystallographic examination of (BRÖGGER), 1881, A., 398.  
microscopical examination of the matrix of (v. ECKENBRECHER), 1881, A., 1014.  
from Etna (v. LASAULX), 1882, A., 284.
- Nebulæ**, constitution of, bearing of the relative intensity of the spectral lines of hydrogen and nitrogen on the (FIEVEZ), 1881, A., 69.
- Nectar** of various flowers, amounts of sugar contained in the (WILSON), 1878, A., 997.
- Nefediewite**, a new mineral from Nertschinsk (PUSIREWSKI), 1873, 1210.
- Negatives.** See under Photochemistry.
- Negro**, skin of the, chemical character of the pigment of the (FLOYD), 1877, i., 329.
- Neocyan** (SCACCHI), 1882, A., 370.
- Neogen**, an alloy resembling silver (ANON.), 1876, i., 131.
- Neolite** (FRENZEL), 1874, 1141.
- Neottia Nidus-aris.*** colouring matter of (PRILLIEUX), 1874, 911.
- Nephelite** (*nepheline*) (RAMMELSBERG), 1878, A., 476.  
of Meiches in the Odenwald (v. KLIPSTEIN), 1879, A., 607.  
chemical composition of (RAUFF), 1879, A., 606.  
incipient crystalline forms of (FOURQUÉ and MICHEL-LÉVY), 1880, A., 448.  
crystallised in druses (VOM RATH), 1873, 251.  
microscopical detection of (STRENG), 1877, ii., 411.
- Nephelite rocks**, metamorphoses of (v. ECKENBRECHER), 1881, A., 1013.
- Nephrite** (FRENZEL), 1874, 447.  
from the Künlün hills (v. SCHLAGINTWEIT-SAKÜNLÜNSKI), 1874, 779.  
from New Zealand (BERWERTH), 1881, A., 377.  
from pile dwellings, composition of (SEUBERT and LINK), 1882, A., 931.  
See also Jadeite.
- Neptunium**, a new metal (HERMANN), 1877, ii., 166.
- Neriodorein and neriodorin** (GREENISH), 1881, A., 916.
- Nerium odorum*** (GREENISH), 1881, A., 916.
- Nerves**, action of ammonia and its salts and of hydrocyanic acid on (BRUNTON and CASH), 1881, A., 1058.
- Nervous substance**, combinations of phosphoric acid in (JOLLY), 1880, A., 274.
- Nervous system**, chemical reaction of the central organs of the (GSCHIEDLÉN), 1874, 82.
- Nessler test** (WANKLYN), 1873, 1055.  
action of, on rain-water and colour produced by, in water containing soluble sulphides (GARSIDE), 1875, 1287; (WATSON), 1875, 1288.  
for ammonia, use of, for the detection of carbonic acid in water, and of caustic alkali in presence of carbonates (SALZER), 1881, A., 940.
- Nesslerising**, simple method of (HEHNER), 1876, ii., 326.
- Nettle**, composition of (STORER and LEWIS), 1879, A., 821.
- Neurine** (GOBLEY), 1874, 908; (HARNACK), 1877, ii., 197.  
behaviour of, to albuminoids (MAUTHNER), 1875, 1206.  
decomposition of (MAUTHNER), 1873, 630.  
base analogous to (WURTZ), 1882, A., 1303.  
See also Ptomaines.
- Neurostearic acid** (THUDICHUM), 1882, A., 537.
- Neutralisation** (THOMSEN), 1876, ii., 157.
- Newberyite** (VOM RATH), 1881, A., 231.
- Nicolite** (*copper-nickel*) from Michelsberg (STOLBA), 1874, 966.  
See also Nickel arsenide.
- Nickel** obtained from minerals from New Caledonia (CHRISTOFLE and BOUILLIET), 1876, ii., 484.  
from American minerals (HOW), 1878, A., 475.  
presence of, in atmospheric dust (TISSANDIER), 1876, ii., 614.

**Nickel**, metallurgy of (DIXON), 1879, A., 285; (DONATH), 1880, A., 770.  
 preparation of (ANON.), 1880, A., 593.  
 malleable (GARNIER), 1880, A., 930.  
 preparation of, and its application in the pure state (FLEITMANN), 1879, A., 563.  
 manufacture of large castings of cobalt and (ANON.), 1877, i., 238.  
 magnetisation of, molecular changes, which accompany the (BARRETT), 1874, 766.  
 colour coefficient of (BAYLEY), 1880, T., 828; 1881, T., 363.  
 colour relations of cobalt, copper, and (BOTTOMLEY), 1882, A., 1.  
 and other metals of the same group, action of hydrogen sulphide on saline solutions of (BAUBIGNY), 1882, A., 1031.  
 action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 81.  
 carburisation of, by cementation (BOUSSINGAULT), 1878, A., 472.  
 amalgamation of (CASAMAJOR), 1878, A., 474.  
 electrolytic deposition of (MERRICK), 1873, 204; (ANON.), 1874, 928; (KAYSER), 1878, A., 537.  
 cast, combining of carbon and silicon with (GARD), 1878, A., 376.  
**Nickel alloy** with copper and zinc (*German silver*), manganese a substitute for nickel in (ANON.), 1873, 1171.  
 with mercury (*nickel amalgam*) (MOISSAN), 1879, A., 693.  
**Nickel compounds**, heat of formation of (THOMSEN), 1877, i., 574.  
**Nickel salts**, preparation of pure, from commercial nickel (TERREIL), 1875, 427.  
**Nickel arsenide** (DESCAMPS), 1878, A., 705.  
 See also Niccolite.  
 chloride, action of hydrogen sulphide on (BAUBIGNY), 1882, A., 1172.  
 fluoride (CLARKE), 1877, ii., 839.  
 hydroxide, estimation of, without filtering, washing, and drying (POPPER), 1879, A., 481.  
 iodate (CLARKE), 1878, A., 377.  
 nitrate, absorption spectrum of a solution of (EMSMANN), 1874, 113.  
 oxides (MOISSAN), 1881, A., 77.  
 preparation and reactions of (WRIGHT and LUFF), 1878, T., 537.  
*trinickelic tetroxide* ( $\text{Ni}_3\text{O}_4$ ) (BAUBIGNY), 1879, A., 299.

**Nickel**, complex oxides of (BAYLEY), 1879, A., 507.  
 phosphide (SCHENK), 1874, 214.  
 hypophosphite (RAMMELSBERG), 1873, 11.  
 sulphate, anhydrous and hydrated, specific gravity of (THORPE and WATTS), 1880, T., 111.  
 ammoniacal, action of hydrogen dioxide on (WATSON), 1882, A., 1262.  
 solution, action of hydrogen sulphide on (BAUBIGNY), 1882, A., 805.  
 action of insoluble metallic sulphides on acid solutions of, in presence of hydrogen sulphide (BAUBIGNY), 1882, A., 928.  
 and cadmium sulphate, equivalent precipitability of (MILLS and HUNT), 1882, A., 689.  
 and cobalt sulphate, chemical equivalence of (MILLS and SMITH), 1879, A., 876.  
 and manganous sulphate, chemical equivalence of (MILLS and BICKET), 1882, A., 689.  
 hydrosulphide (BAUBIGNY), 1882, A., 1032.  
 potassium sulphide (SCHNEIDER), 1875, 43.  
**Nickel organic compound**:—  
 mercaptide (CLAESON), 1877, ii., 295.  
**Nickel ores** (LASPEYRES), 1877, i., 581.  
 of Horbach, near St. Blasien in the Black Forest (KNOR), 1874, 34.  
 from New Caledonia (TYPKE), 1877, i., 285.  
 composition of (ANON.), 1880, A., 593.  
 of Spain (MEISSONNIER), 1876, ii., 612.  
 analysis of (FRESENIUS), 1873, 1261; 1874, 1180.  
**Nickel glance**. See Gersdorffite.  
**Nickel-speiss** (*placodine*) (BRAUN), 1881, A., 228.  
**Nickel**, detection, estimation and separation:—  
 use of bromine in the analysis of (LANGEIN), 1882, A., 99.  
 detection of (BÖTTGER), 1879, A., 179; (DONATH and MAYRHOFER), 1882, A., 555.  
 detection of cobalt and, in presence of each other (PAPASOGLI), 1880, A., 286.  
 detection of iron in salts of (BÖTTGER), 1874, 1101.  
 estimation of (ANON.), 1877, ii., 925; (BUSSE), 1878, A., 338; (DONATH), 1880, A., 287, 771; (OHL), 1880, A., 583; (FRESENIUS and BERGMANN), 1880, A., 751.

**Nickel, estimation and separation:—**

- estimation of, in pyrrhotites and mattes (CHENEY and RICHARDS), 1878, A., 244.
- estimation of, by precipitation as oxalate (CLASSEN), 1877, ii., 924; 1879, A., 1054.
- estimation of lead, manganese, zinc and (RICHE), 1877, ii., 924; 1878, A., 750.
- separation of, from cobalt (GUYARD), 1876, ii., 550; (PHIPSON), 1877, ii., 597, 925; (DIRVELL), 1880, A., 287; (REICHEL), 1881, A., 194; (DELYAUX), 1881, A., 1082; (JORISSEN), 1882, A., 1234.
- separation of, from cobalt and iron (ZIMMERMANN), 1880, A., 189.
- separation of arsenic from cobalt and (WÖHLER), 1877, ii., 573.
- separation of ferric oxide and alumina from (CLASSEN), 1879, A., 970.
- separation of cobalt, manganese, zinc and, from iron (CLASSEN), 1877, ii., 924; (CLASSEN and v. REIS), 1881, A., 1082.
- separation of, from copper (BUSSE), 1878, A., 339.
- separation of, from iron (MOORE), 1881, A., 1171.
- separation of, from zinc (FRESENIUS), 1873, 1261; 1874, 1180; (BEILSTEIN), 1879, A., 276.
- Nickel money**, analysis of (BUSSE), 1878, A., 337.
- Nickel plates**, cast (BORCHERT), 1874, 832.
- Nicotine**. See under Alkaloids.
- Nicotinic acid** (*carbopyridenic acid*; *pyridine-3-carboxylic acid*) (LAIBLIN), 1878, A., 432; 1879, A., 808; (HOOGWERFF and VAN DORP), 1879, A., 731; 1880, A., 406; 1882, A., 311; (CAHOURS and ETARD), 1879, A., 732; 1880, A., 672; (WEIDEL), 1880, A., 267; (WISCHNEGRADSKY), 1880, A., 269; (OECHSNER DE CONINCK), 1881, A., 444; (FISCHER), 1882, A., 627.
- formed by the oxidation of nicotine (WEIDEL), 1873, 509.
- action of phosphorus pentachloride on (LAIBLIN), 1879, A., 809.
- iso***Nicotinic acid** (*pyridine-4-carboxylic acid*; *pyrocinchomeronic acid*) (HOOGWERFF and VAN DORP), 1880, A., 405; 1882, A., 311.
- Nigella sativa*, examination of the seeds of (GREENISHT), 1880, A., 718.
- Nigrosin**, manufacture of (WOLFF), 1880, A., 78.

**Nile mud**, composition of (KNOP), 1874, 672.

**Nile water**, amount of nitric acid in (D'ABBADIE), 1879, A., 905.

composition of (TIDY), 1880, T., 277, 290.

**Nim tree**. See *Azadirachta indica*.

**Niobates**, composition of (SMITH), 1877, ii., 576, 714; 1879, A., 12.

**Niobates and tantalates** (JOLY), 1876, i., 46.

**Niobite**. See Columbite.

**Niobium mineral**, new, from Amherst Co., Virginia (BROWN), 1877, ii., 853.

**Niobium**, metallic (*columbium*) (ROSCOE), 1878, A., 272.

some compounds of (SANTESSON), 1876, i., 45; ii., 383.

carbide (JOLY), 1876, ii., 277.

trichloride (ROSCOE), 1878, A., 273.

oxyfluoride (JOLY), 1876, i., 883.

nitride (JOLY), 1876, ii., 277.

**Nitracetanilide**, action of potassium nitrite on (MÜLLER-JACOBS), 1878, A., 140.

*o*-**Nitracetanilide** (HÜBNER), 1876, ii., 309.

**Nitr-*o*-acetanisides**, *mono*- and *di*- (MÜHLHÄUSER), 1881, A., 641; 1882, A., 302.

**Nitracetomesidide** (LADENBURG), 1875, 63.

**Nitracetophthalide**. See Acetophthalide.

*m*-**Nitracetophenone** (HÜBNER), 1878, A., 147.

*p*-**Nitracetophenone** (DREWSSEN), 1882, A., 847.

**Nitracetovanillic acid** (TIEMANN and MATSMOTO), 1876, ii., 525.

**Nitracetoisovanillic acid** (MATSMOTO), 1878, A., 501.

**Nitr-2-aceto-*p*-xylylide** [m.p. 192°] (SCHAUMANN), 1879, A., 52.

**6-Nitr-2-aceto-*p*-xylylide** [m.p. 180°] (WROBLEWSKI), 1881, A., 433.

*o*-**Nitracetylene** (v. BAAYER), 1881, A., 275.

**Nitracetylene** (WESELSKY and BENEDIKT), 1882, A., 1201.

**Nitralizarin**. See Alizarin.

*p*-**Nitr-*p*-amidoacetyldiphenyl** (SCHMIDT and SCHULTZ), 1881, A., 911.

**Nitramidobenzene**. See Aniline, nitr-.

**Nitramidobenzoic acid**. See Benzoic acid.

**Nitramidobenzo-*p*-toluidide**. See Benzo-tolylene-3:4-dianiline, nitr-.

"**Nitramidodiphenylimide**." See Diazo-compound of  $\alpha$ -nitronaphthyl-aniline under Azo.

- pp*-Nitramidodiphenyl (SCHULTZ), 1875, 150.
- iso*Nitramidodiphenyl (SCHULTZ), 1874, 468; 1875, 150; (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 911.
- Nitramido- $\alpha$ -naphthol-2'-sulphonic acid (LAUTERBACH), 1882, A., 64.
- 4:2-Nitramidophenetoil (ANDREAE), 1880, A., 466.
- Nitramidophenols. See Phenol.
- 4:6:2-*di*Nitramidophenol. See Picramic acid.
- 2:4-Nitramidophenylacetic acid (GABRIEL and MEYER), 1881, A., 730.
- 2:4-Nitramido- $\beta$ -phenylpropionic acid (GABRIEL and ZIMMERMANN), 1879, A., 640.
- 3:4-Nitramido- $\beta$ -phenylpropionic acid (GABRIEL and STEUDEMANN), 1882, A., 1073.
- 4:2-Nitramidoresorcinol and sulphate (BENEDIKT and V. HÜBL), 1881, A., 1132.
- 4:6:2-*di*Nitramidoresorcinol (*styphnanic acid*) (BENEDIKT and V. HÜBL), 1881, A., 1133.
- p*-Nitramidostilbene (STRAKOSCH), 1873, 890.
- Nitr-*di*-*p*-amidotriphenylmethane (FISCHER), 1882, A., 833.
- m*-Nitr-*di*-*p*-amidotriphenylmethane, oxidation of (FISCHER and ZIEGLER), 1880, A., 663.
- Nitramines, isomeric, action of alkalis on (WAGNER), 1874, 481, 808.
- Nitramylene, preparation and properties of (HAITINGER), 1881, A., 1115.
- di*Nitr-*iso*amyloxanthranol (LIEBERMANN), 1881, A., 100.
- Nitranic acid (NIETZKI), 1878, A., 425.  
potassium salt of (HERRMANN), 1882, A., 714.
- Nitraniline. See Aniline.
- 2:4:6-*tri*Nitraniline. See Picramide.
- Nitranilinesulphonic acids. See Anilinesulphonic acids.
- 3:5-*di*Nitranisic acid and its derivatives (SALKOWSKI and RUDOLPH), 1878, A., 72.
- Nitranisoil. See Anisoil.
- Nitranthracene and its derivatives (SCHMIDT), 1873, 1233; 1874, 581.
- tetra*Nitranthraflavic acid (*tetranitro- $\beta$ -anthraflavone*) (SCHARDINGER), 1876, i., 584.
- tetra*Nitr-*iso*anthraflavic acid (ROEMER and SCHWARZER), 1882, A., 975.
- 3:5-*di*Nitranthranilic acid, ammonium salt of (SALKOWSKI), 1875, 71.
- $\alpha$ -Nitranthraquinone (BÖTTGER and PETERSEN), 1873, 389; (CLAUS and HERTEL), 1881, A., 737.
- $\alpha$ -*di*Nitranthraquinone (CLAUS and HERTEL), 1881, A., 737.
- di*Nitranthraquinonechrysene, preparation of (SCHMIDT), 1874, 581, 987.
- Nitranthraquinonesulphonic acids.  $\alpha$ - and  $\beta$ -, and their salts (CLAUS), 1882, A., 1105.
- tetra*Nitranthrarufin (LIEBERMANN), 1879, A., 538.
- di*Nitranthrol methyl ether (LIEBERMANN and HAGEN), 1882, A., 1212.
- di*Nitr- and nitronitroso-anthrone (LIEBERMANN and LANDSHOFF), 1881, A., 607.
- Nitrarbutin (HLASIWETZ and HABERMANN), 1876, i., 80.
- Nitrates. See Nitric acid under Nitrogen.
- Nitrazo-. See under Azo-.
- Nitre. See Potassium nitrate.
- Nitrethanes. See Ethane.
- 1:3-*di*Nitr-2-ethoxyanthraquinone (SIMON), 1882, A., 863.
- 3-Nitr-*p*-ethoxytoluene (KAYSER), 1882, A., 1203.
- Nitr-3-ethoxy-*p*-toluic acid (PATERNO and CANZONERI), 1880, A., 247.
- Nitr-*m*-ethylamidobenzoic acid (HÜBNER), 1878, A., 148.
- Nitrethylanthrone (LIEBERMANN and LANDSHOFF), 1881, A., 607.
- "*di*Nitrethylic acid" (ZUCKSCHWERT), 1874, 677.  
method of preparing (FRANKLAND and GRAHAM), 1880, T., 570.
- Nitrethylorcinol (WESELSKY and BENEDIKT), 1881, A., 1140.
- Nitrethylpyrogallol (WESELSKY and BENEDIKT), 1882, A., 53.
- 2:6-*di*Nitrethylthymol (LADENBURG and ENGELBRECHT), 1878, A., 60.
- di*Nitrethylxylene (ROMMEL), 1873, 887.
- Nitreugenol and its derivatives (WESELSKY and BENEDIKT), 1882, A., 1200.
- Nitric acid. See under Nitrogen.
- Nitric anhydride. See Nitrogen pentoxide.
- oxide. See Nitrogen dioxide.
- peroxide. See Nitrogen peroxide.
- Nitrification. See under Agricultural Chemistry.
- Nitriles, presence of, in the distillate obtained by the calcination of residues from beetroot molasses (VINCENT), 1879, A., 612.  
preparation of (WITT), 1873, 879.



- Nitriles** from hydrocyanic acid and acetaldehydeammonia (ERLENMEYER and PASSAVANT), 1880, A., 313.  
 action of, on the haloid ethers of benzyl (BRUNNER), 1877, i., 466.  
 action of nascent hydrogen on (SPICA), 1881, A., 262.  
 action of hydrogen sulphide on (v. HOFMANN), 1877, ii., 604.  
 and their analogues, action of organo-zinc compounds on (FRANKLAND), 1880, T., 560; (FRANKLAND and GRAHAM), 1880, T., 740.  
 direct conversion of, into compound ethers (BECKURTS and OTTO), 1877, ii., 874.  
 conversion of, into imides (PINNER and KLEIN), 1878, A., 141, 491, 864; 1879, A., 46.  
 of the higher members of the acetic acid series (KRAFFT and STAUFER), 1882, A., 1273.  
 aromatic (MERZ and SCHEINBERGER), 1876, i., 600.  
 preparation of (MERZ and WEITH), 1877, ii., 602.  
 action of potassium sulphhydrate on (WEDDIGE), 1873, 1241.
- Nitrihæmoglobin.** See Methæmoglobin under Hæmoglobin.
- diNitriding** (v. BAAYER), 1879, A., 938.
- diNitriding-red** (*indigo-purpurin*; *indirubin*) (v. BAAYER), 1879, A., 939.
- Nitrisatin** (v. BAAYER), 1879, A., 938.
- Nitrites and hyponitrites.** See Nitrous and Hyponitrous acids under Nitrogen.
- Nitro-acids** derived from ketones (CHANCEL), 1878, A., 964; 1882, A., 710, 824.
- Nitrobenzaldehyde.** See Benzaldehyde.
- Nitrobenzaldehyde-green.** See Malachite-green under Colouring matters.
- o-Nitrobenzaldoxime** (*nitrosomethyl-o-nitrobenzene*) (GABRIEL and MEYER), 1882, A., 188.
- m-Nitrobenzaldoxime** (GABRIEL), 1882, A., 1070.
- Nitrobenzamide** (STRAKOSCH), 1874, 78.
- o-Nitrobenzamide** (HÜBNER), 1878, A., 140.
- Nitrobenzanilide.** See Benzanilide.
- Nitrobenzenes.** See Benzene.
- Nitrobenzeneazobenzene-p-sulphonic acids**, *mono*-, *di*- and *tri*-, and their salts (JANOVSKY), 1882, A., 836, 1285.
- m-Nitrobenzeneazonitrene** (HALLMANN), 1876, ii., 93.
- diNitrobenzenedisulphonic acid** (LIMPRICHT), 1875, 765.
- α-Nitrobenzene-3:5-disulphonic acid** (HEINZELMANN), 1878, A., 409.
- Nitrobenzenephosphonic acid.** See Nitrophosphenylic acid.
- m-Nitrobenzenesulphonamide** (GOSLICH), 1876, i., 930.
- Nitrobenzenesulphonamides**, *m*- and *p*-, action of zinc-dust on (MAHRENHOLTZ and GILBERT), 1880, A., 805.
- triNitrobenzenesulphonanilide** (MICHLER and BLATTNER), 1879, A., 922.
- Nitrobenzenesulphonic acid.** See Benzenesulphonic acid.
- m-Nitrobenzenesulphonic chloride** (GOSLICH), 1876, i., 930.
- Nitrobenzenyl-o-phenylenediamine** (HÜBNER), 1881, A., 1131.
- Nitrobenzenyltolenylenediamines**, *mono*- and *di*- (HÜBNER), 1881, A., 1131; 1882, A., 505.
- p-Nitrobenzil**, reduction of, by tin (GOLUBEFF), 1874, 273.
- diNitrobenzil** (ZAGUMENNY), 1873, 502.
- iso-diNitrobenzil** (GOLUBEFF), 1881, A., 422.
- Nitrobenzoic acid.** See Benzoic acid.
- m-Nitrobenzoic chloride** (CLAISEN and THOMPSON), 1880, A., 253.
- o-Nitrobenzoic cyanide**, test for (CLAISEN), 1880, A., 68.
- m-Nitrobenzoic cyanide** (CLAISEN and THOMPSON), 1880, A., 253.
- Nitrobenzomesidide**, *mono*- and *tri*- (HÜBNER), 1878, A., 144.
- Nitrobenzo-α-naphthalides**, 2- and 4- (EELLE), 1875, 272, 900.
- 2-*mono*- and 2:4-*di*- (HÜBNER), 1881, A., 1132.
- Nitrobenzonaphthylthiocarbamide** (MIQUEL), 1877, ii., 871.
- o-Nitrobenzonitrile** (HÜBNER), 1878, A., 140.
- m-Nitrobenzo-mono- and -di-nitromesidides** (HÜBNER), 1878, A., 144.
- Nitrobenzophenone.** See Benzophenone.
- Nitrobenzophenylthiocarbamide** (MIQUEL), 1877, ii., 870.
- Nitrobenzotoluidide.** See Benzotoluidide.
- Nitrobenzotolylene-3:4-diamine** and *α*- and *β*-nitrobenzo-*m*-xylylides (HÜBNER), 1881, A., 1132.
- m-Nitrobenzoylacetic acid** (LIEBERMANN), 1877, ii., 617.
- Nitrobenzylamines**, secondary and tertiary (STRAKOSCH), 1874, 79.
- p-Nitrobenzylaniline** (STRAKOSCH), 1874, 80.

*o*-Nitrobenzylic alcohol (FRIEDLÄNDER and HENRIQUES), 1882, A., 810.  
*di*Nitrobenzylic alcohol (ORTH), 1882, A., 1198.  
*o*-Nitrobenzylic chloride (WACHENDORFF), 1876, i., 80.  
*p*-Nitrobenzylic nitrate (ORTH), 1882, A., 1198.  
 Nitrobenzylic selenocyanate (JACKSON), 1875, 1024; 1876, i., 581.  
*m*-Nitrobenzylidenic chloride (WIDMAN), 1880, A., 635; 1882, A., 47.  
 Nitrobenzylphenol. See Benzylphenol.  
 Nitro-*p*-benzylphenolsulphonic acid, and its salts (RENNIE), 1882, T., 34, 220.  
*di*Nitrobrucine (CLAUS and RÖHRE), 1881, A., 749.  
 Nitrobutanes. See Butane.  
 Nitroisobutylazophenyl. See Benzene-azonitroisobutane under Azo.  
 Nitrobutylene and its reactions and homologues (HAITINGER), 1879, A., 700; 1881, A., 1114.  
 sodium-derivative of (HAITINGER), 1879, A., 701.  
 Nitrocampbor (SCHIFF), 1880, A., 891.  
 action of bromine and chlorine on (SCHIFF), 1881, A., 438.  
*tetra*Nitrocarbazoole (GRAEBE and v. ADLERSKRON), 1880, A., 660.  
 Nitrocarbol. See Methane, nitro-.  
 Nitro- $\alpha$ -carbopyrrolic acid and its salts (CIAMICIAN and DANESI), 1882, A., 875.  
 Nitrocarboxybenzeneazonitrobenzoic acid (GOLUBEFF), 1874, 805.  
 Nitrocarvacrol, action of nitric acid on the methyl ether of (PATERNO and CANZONERI), 1880, A., 884.  
 Nitrochloroform. See Chloropicrin.  
 Nitrocholesterin, *mono*- and *di*- (PREIS and RAYMAN), 1879, A., 634.  
 Nitrochrysazin. See Chrysazin.  
 Nitrochrysenes, *mono*-, *di*-, and *tetra*- (SCHMIDT), 1874, 987.  
*di*Nitrochrysin (PICCARD), 1873, 1236.  
 Nitrochrysophanic acid (LIEBERMANN), 1877, i., 611.  
*tetra*Nitrochrysophanic acid and its salts (LIEBERMANN and GIESEL), 1876, ii., 90; (LIEBERMANN), 1877, i., 611.  
*di*Nitrochrysoquinone (ADLER), 1880, A., 263.  
 Nitrocinnamic acid. See Cinnamic acid.  
 Nitrocitric acid (CHAMPION and PELLET), 1876, i., 566.  
 Nitrocodeine, action of phosphorus pentachloride on (v. GERICHTEN), 1882, A., 313.

Nitrocresol. See Cresol.  
 Nitro-*o*-cresol-4-sulphonic acid (HAY-DUCK), 1874, 1096; 1875, 461.  
 Nitroctane (EICHLER), 1880, A., 229.  
*di*Nitro- $\psi$ -cumene, isomeric (ROMMIER), 1873, 888.  
 Nitrocinmaldehyde and its derivatives (LIPPMANN and STRECKER), 1879, A., 464; 1880, A., 251.  
 Nitrocuminic acid. See Cumimic acid.  
 Nitrocymene. See Cymene.  
 Nitrocymenedisulphonic acid and its salts (LEONE), 1882, A., 722.  
 Nitrodeoxybenzoin (GOLUBEFF), 1879, A., 790.  
*di*Nitrodeoxybenzoin, isomeric (GOLUBEFF), 1881, A., 422.  
 Nitro-derivatives (LAUBENHEIMER), 1877, i., 594; 1878, A., 405, 975; 1882, A., 953.  
 action of hydrogen sulphide on (BEILSTEIN and KURBATOFF), 1878, A., 139; 1879, A., 230.  
 action of alcoholic soda on (HESS and SCHWAB), 1878, A., 130.  
 reduction of, by stannous chloride (LIMPRICHT), 1878, A., 335.  
 chlorinated, action of sodium on (v. HOFMANN and GEYGER), 1873, 168.  
 additive products of (HEPP), 1879, A., 50.  
 aromatic, action of acids on (MEYER and LOCHER), 1875, 640.  
 action of potassium cyanide on substituted (v. RICHTER), 1876, i., 387.  
 of the fatty series (MEYER and CHOJNACKI; MEYER and RILLIET), 1873, 261; (MEYER and WURSTER), 1873, 611; 1874, 146; (MEYER), 1874, 365; 1875, 557.  
 constitution of (KISSEL), 1882, A., 935.  
 action of acids on (MEYER and LOCHER), 1876, i., 903.  
 substitution in (MEYER and TCHERNIAC), 1874, 982; (TCHERNIAC), 1874, 1151.  
 Nitrodiacetophenylenediamine (BARBAGLIA), 1875, 273.  
 Nitrodiacetotolylene-2:4-diamine (LADENBURG), 1876, i., 401.  
 2:5-*di*Nitrodiacetylquinol (HESSE), 1880, A., 317.  
*di*Nitrodianilidodiphenylsulphone (ANNAHEIM), 1874, 697.  
 Nitrodiazo-compounds (LIMPRICHT), 1874, 805.  
 Nitrodiazoxybenzoic acid (MICHLER), 1875, 645.

- di*-Nitrodibenzoyldiphenyl (GOLDSTEIN), 1879, A., 148.
- di-p*-Nitrodibenzylamine (STRAKOSCH), 1874, 78.
- di*-Nitrodibenzylmethane, formation of (SESEMANN), 1875, 74.
- Nitro-2:5-diethoxybenzaldehyde (HANTZSCH), 1881, A., 167.
- Nitro-1:4-diethoxybenzene. See 1:4-Diethoxybenzene.
- di*-Nitrodiethoxydiphenylsulphone (ANNAHEIM), 1874, 797.
- Nitrodiethylpyrogallol (*nitrohydroxy-dithoxybenzene*) (WESELSKY and BENEDIKT), 1882, A., 53.
- tetra*-Nitrodihydroxydiphenylsulphone, and its salts (ANNAHEIM), 1879, A., 244.
- Nitro-1:3-dimethoxybenzenes, *di*- and 2:4:5-*tri*- (HÖNIG), 1878, A., 727.
- Nitro-1:4-dimethoxybenzenes, *mono*-, 2:5-*di*-, and *tri*- (HABERMANN), 1878, A., 728.
- di*-Nitrodimethoxydiphenylsulphone (ANNAHEIM), 1874, 796.
- Nitrodimethylaniline. See Dimethylaniline.
- hexa*-Nitrodimethylanilinephthalein (FISCHER), 1881, A., 588.
- Nitrodimethylanilinesulphonic acid (MICHLER and WALDER), 1882, A., 176.
- Nitrodimethyl-*m*-toluidines, *mono*- and *di*- (WURSTER and RIEDEL), 1880, A., 109.
- Nitro- $\beta$ -dinaphthyl (SMITH), 1877, ii., 558.
- "*tri*-Nitrodioxyazobenzene" (PETRIEFF), 1873, 1028.
- $\alpha$ -*di*-Nitrodiphenic acid (HUMMEL), 1879, A., 165.
- $\beta$ -*di*-Nitrodiphenic acid, and its salts (SCHULTZ), 1880, A., 814.
- di*-Nitrodiphenoxydiethylamine (WEDDIGE), 1881, A., 1137.
- Nitrodiphenoxyethane (WEDDIGE), 1881, A., 1137.
- di*-Nitrodiphenoxyethane (WEDDIGE), 1880, A., 316.
- Nitrodiphenyl. See Diphenyl.
- Nitrodiphenylamine. See Diphenylamine.
- p*-Nitrodiphenyl-*p*-azo- and -azoxy-nitrodiphenyls (WALD), 1877, ii., 341.
- tri*-Nitro-*p*-diphenylbenzene (SCHMIDT and SCHULTZ), 1879, A., 163; 1881, A., 435.
- Nitro-*s*-diphenylcarbamide. See *s*-Diphenylcarbamide.
- Nitrodiphenyl-*o*-carboxylic acid (SCHMITZ), 1879, A., 164; (SCHMIDT and SCHULTZ), 1881, A., 435.
- 3:4-*di*-Nitrodiphenyl-*p*-carboxylic acid and its salts (STRASSER and SCHULTZ), 1882, A., 521.
- o*-Nitrodiphenyldiacetylene (v. BAEYER and LANDSBERG), 1882, A., 622.
- o-di*-Nitrodiphenyldiacetylene (v. BAEYER), 1882, A., 619; (v. BAEYER and LANDSBERG), 1882, A., 972.
- p*-Nitrodiphenyldisulphonic acid (GABRIEL and DAMBERGIS), 1880, A., 890.
- Nitrodiphenylene ketones, 2-*mono*- and 2:2'-*di*- (SCHULTZ), 1880, A., 814.
- Nitrodiphenylene ketonecarboxylic acid (FITTIG and LIEPMANN), 1880, A., 401.
- Nitrodiphenylguanidines, *m-mono*- and *di*- (BRÜCKNER), 1875, 166.
- tri*-Nitro-*s*-diphenylhydrazine (FISCHER), 1878, A., 309.
- Nitrodiphenylic oxide. See Diphenylic oxide.
- 2:4-*tetra*-Nitrodiphenylic sulphide (BEILSTEIN and KURBATOFF), 1878, A., 139; 1879, A., 230; (WILLGERODT), 1879, A., 714.
- Nitrodiphenylmethanes, *iso*-, *di*-, and *tetra*- (DOER), 1873, 170.
- 2:4-*di*-Nitrodiphenylmethylamine (LEYMANN), 1882, A., 1057.
- Nitrodiphenylnitrosamine, and the action of bromine on (WITT), 1878, T., 206.
- di*-Nitrodiphenylphthalide (v. BAEYER), 1880, A., 652.
- tetra*-Nitrodiphenylsulphone (BEILSTEIN and KURBATOFF), 1878, A., 139; 1879, A., 230.
- p*-Nitrodiphenyl-*p*-sulphonic acid (GABRIEL and DAMBERGIS), 1880, A., 890.
- m*-Nitrodiphenylthiocarbamide (LOSANITSCH), 1882, A., 183.
- Nitrodiphenylthiocarbamides, *m-mono*- and *di*- (BRÜCKNER), 1874, 77; 1875, 166.
- $\alpha$ -*tetra*-Nitrodioresorcinol (BENEDIKT and v. HÜBL), 1881, A., 1132.
- di*-Nitro-*p*-dipropylbenzene (KÖRNER), 1879, A., 142.
- Nitrodi-*p*-tolylamines, *o-mono*- and *di*- (LELLMANN), 1882, A., 1060.
- hexa*-Nitrodi-*p*-tolylamine (LEHNE), 1881, A., 41.
- di*-Nitrodi-*p*-tolylcarbamide and its reduction (PERKIN), 1880, T., 699.
- di*-Nitroditolyltrichlorethane (FISCHER), 1875, 154.

*d*-Nitrodi-*p*-tolylguanidine and its nitrate (PERKIN), 1880, T., 697.

Nitrodracyle acid. See Benzoic acid, *p*-nitro-.

*d*-Nitrodurene (ROMMIER), 1873, 888.

Nitroethyl-. See Nitrethyl-.

*tri*Nitrofluoranthene (FITTIG and GEHARD), 1878, A., 431; 1879, A., 166.

*d*-Nitrofluorene (FITTIG and SCHMITZ), 1879, A., 164.

*tetra*Nitrofluorescein (FISCHER), 1875, 159; (V. BAEYER), 1877, i., 200.

Nitroform (*trinitromethane*), danger of preparing (MEYER), 1875, 1256.  
action of tin and hydrochloric acid on (MEYER and LOCHER), 1876, i., 904.

*o*-Nitroformanilide (HÜBNER), 1882, A., 181.

Nitrogen, occurrence of, amongst the gaseous products of alcoholic fermentation (BROWN), 1873, 973.  
in beetroots (CHAMPION and PELLET), 1876, i., 420.  
amount of, in worm-eaten fruit (STEFANELLI), 1876, i., 421.  
amount of, in milk (LIEBERMANN), 1876, ii., 216.  
amount of, in the milk of women and of cows (NENCKI), 1876, i., 90.  
presence of, in iron and steel (ALLEN), 1879, A., 1017; 1880, A., 749.  
in plants and soils. See under Agricultural Chemistry.

in turf (V. SIVERS), 1880, A., 344.

evolution of, during putrefaction (DIETZEL), 1882, A., 991, 1122.

possibility of the disengagement of, during the decay of nitrogenous organic matter (HÜBNER) 1876, ii., 210.

a product of the decomposition of albuminoids in the body (SEEGEN and NOWAK), 1880, A., 272.

recovery of, from molasses waste (KISIELŃSKI), 1882, A., 669.

preparation of (LUPTON), 1876, i., 679.

atomic volume of (RAMSAY), 1881, T., 66.

specific volume of (THORPE), 1880, T., 143, 391.

ebullition volume of (RAMSAY), 1879, T., 472.

spectrum of (SCHUSTER), 1873, 340.

and alkali-metals, spectra of, in Geissler's tubes (SALER), 1876, i., 863.

relative intensity of the spectral lines of, its bearing on the constitution of nebulae (FIEVEZ), 1881, A., 69.

Nitrogen, refraction-equivalents of, in organic compounds (GLADSTONE), 1881, A., 958; 1882, A., 133.

valency of (LADENBURG and STRUYE), 1877, ii., 838; (LADENBURG), 1878, A., 10.

mechanical explanation of the varying valency of phosphorus and (WALTER), 1874, 221.

liquid, specific gravity of, in presence of inert liquids (CAILLETET and HAUTEFEUILLE), 1881, A., 874.

affinity of hydrogen for (THOMSEN), 1873, 126, 838.

combustion of (KAEMMERER), 1878, A., 110.

absorption of, by organic substances (BERTHELOT), 1876, ii., 332, 616.

action of bacteria on (HATTON), 1881, T., 253.

action of charcoal on organic (STANFORD), 1873, 14.

action of earth on organic (STANFORD), 1874, 938.

action of humic acid on atmospheric (PREVOST), 1881, T., 370.

behaviour of finely divided iron towards (REMSEN), 1881, A., 1104.

of barley, division of, among the products of brewing (ZMERZLIKAR), 1876, ii., 345.

proportion of, to phosphoric acid in milk (STOHMANN), 1873, 518.

proportion of, to phosphoric acid, in urine (ZUELZER), 1877, ii., 205.

fixation of, on organic substances, under the influence of feeble electric tensions (BERTHELOT), 1877, ii., 862.

conversion of organic, into ammonia (GROUVEN), 1882, A., 1316.

does ozone combine with free, in presence of alkalis to form nitrites and nitrates? (BERTHELOT), 1877, i., 438.

influence of the presence of, in textile fabrics, on the direct fixing of aniline-colours (JACQUEMIN), 1874, 1026.

table of the absorption of, in the human intestinal canal (RUBNER), 1880, A., 565.

elimination of, from the animal body (SEEGEN and NOWAK), 1880, A., 272; 1882, A., 636; (OPPENHEIM), 1880, A., 818; (GRUBER), 1881, A., 451; (V. PETTENKOFER and V. VOIT), 1882, A., 238, 747.

elimination of, from tyrosine (KÜRNER and MENOZZI), 1882, A., 730.



**Nitrogen-compounds**, action of hypochlorites and hypobromites on (FOSTER), 1878, T., 470; 1879, T., 119; (FENTON), 1879, T., 12.  
 action of stannous chloride on (v. DUMREICHER), 1882, A., 361.  
 with sulphur (DEMARÇAY), 1881, A., 976.

**Nitrogen oxybromide**. See Nitrosyl bromide.

chloride, safe preparation of (BÖTTGER), 1874, 654.

decomposition of (CHAMPION and PELLET), 1876, i., 518.

chlorides, substituted (KÖHLER), 1879, A., 780.

oxychloride. See Nitrosyl chloride.

iodide (MALLER), 1879, A., 882.

safe method of preparing (BÖTTGER), 1878, A., 199.

decomposition of (CHAMPION and PELLET), 1876, i., 518.

action of, on starch (HUSSON), 1873, 46.

oxides (BERTHELOT), 1874, 439.

thermochemistry of (THOMSEN), 1880, A., 689.

heat evolved in various reactions of (BERTHELOT), 1874, 440.

heat of formation of (THOMSEN), 1880, A., 82, 603; (BERTHELOT), 1880, A., 522; 1881, A., 6.

reduction of (ARMSTRONG and ACWORTH), 1877, ii., 54.

loss of, in the manufacture of sulphuric acid, and a means of preventing it (LASNE and BENKER), 1881, A., 475; (LUNGE), 1882, A., 1010.

in oil of vitriol, estimation of (DAVIS), 1878, A., 605.

estimation of, in commercial iron mordant (VOHL), 1874, 603.

**Nitrogen monoxide** (*nitrous oxide*), density of (v. DUMREICHER), 1882, A., 362.

solidification of (WILLS), 1874, 21.

decomposition of, by heat (WAGNER), 1882, A., 1317.

action of bacteria on (HATTON), 1881, T., 253.

reaction between hydrogen and, in presence of spongy platinum (WRIGHT), 1881, T., 361.

germination of seeds in (COSSA), 1876, i., 97.

physiological action of (JOLYET and BLANCHE), 1873, 1154.

narcosis produced by (NUSSEBAUM), 1874, 996.

**Nitrogen monoxide** (*nitrous oxide*), estimation of (LUNGE), 1882, A., 244; (v. DUMREICHER), 1882, A., 362; (HEMPEL), 1882, A., 1132.

**Nitrogen dioxide** (*nitric oxide*), preparation of (JOHNSTONE), 1882, A., 692.

formation of, by ignition of nitre (WAGNER), 1880, A., 574.

explosion of (BERTHELOT), 1882, A., 454.

liquefaction of (CAILLETET), 1878, A., 11.

vapour-density of (BRODIE), 1879, T., 677.

decomposition of, by heat (WAGNER), 1882, A., 1317.

combination of, with oxygen (BRUYLANTS), 1876, i., 878.

action of bacteria on (HATTON), 1881, T., 257.

reaction between hydrogen and, in presence of spongy platinum (WRIGHT), 1881, T., 357.

action of potassium pyrogallol on (LECHARTIER), 1879, A., 1012.

action of sulphurous oxide on (KUHLMANN), 1874, 829, 924; (LUNGE), 1882, A., 139.

absorption of, by ferrous salts (GAY), 1880, A., 9.

as a supporter of combustion (BERTHELOT), 1882, A., 264.

use of, for the recovery of manganese dioxide from manganese liquor (KUHLMANN), 1874, 829, 924.

as a disinfectant (SUILLOT), 1881, A., 664.

action of, on blood (GIACOSA), 1879, A., 817.

expulsion of, from blood (PODOLINSKI), 1873, 397.

absorbents for (BÖHMER), 1882, A., 1230.

estimation of, as ammonia (GUYARD), 1882, A., 773.

estimation of, in the exit gases of acid chambers (DAVIS), 1880, A., 746; (LUNGE), 1882, A., 774.

**Nitrogen peroxide** or *tetroxide* (*nitric peroxide*), physical properties of (THORPE), 1880, T., 224.

absorption spectrum of (VOGEL), 1879, A., 191.

specific heat of (BERTHELOT and OGIER), 1882, A., 1019.

vapour-density of (TROOST), 1878, A., 365; (BRODIE), 1879, T., 677;

(NAUMANN), 1879, A., 195.

action of, on arsenic and boron trichlorides (GEUTHER), 1874, 539.

**Nitrogen peroxide** or *tetroxide*) (*nitric peroxide*), action of, on carbon compounds (LEEDS), 1881, A., 584.  
behaviour of, with sulphuric acid (LUNGE), 1879, A., 770; 1880, A., 91, 440; 1882, A., 1010, 1162.  
molecular combination of magnesium phosphates and (LUCK), 1875, 238.  
estimation of (LIMPRICHT), 1878, A., 335.  
estimation of, as ammonia (GUYARD), 1882, A., 773.  
estimation of, in organic substances (CHAMPION and PELLET), 1877, i., 228.

**Nitrogen trioxide** (*nitrogen sesquioxide*; *nitrous anhydride*), prepared from starch and nitric acid (LUNGE), 1878, A., 833.  
existence of, in the gaseous state (LUNGE), 1878, A., 833; 1879, A., 502; 1880, A., 440; 1882, A., 926.  
action of, on chloral (WALLACH), 1875, 350.

**Nitrogen pentoxide** (*nitric anhydride*), preparation of (BERTHELOT), 1874, 868, 1057.  
heat of combination of, with water vapour (BERTHELOT), 1877, ii., 825.

**Pernitric oxide** ( $N_2O_6$ ?), spectrum of (HAUTEFEUILLE and CHAPPUIS), 1881, A., 221; 1882, A., 800, 927; (CHAPPUIS), 1882, A., 1017.

**Nitrogen acids**, heat of formation of (THOMSEN), 1880, A., 82.  
polybasic compounds of (MEISSNER), 1877, i., 296.

**Nitric acid**, occurrence of, amongst the products of combustion of coal-gas and hydrogen flames (WRIGHT), 1879, T., 42.

formation of, in the soil (REICHARDT, HÜNEFELD, and HERTZ), 1880, A., 59.

formation of, in nature (CARIUS), 1875, 128.

continuous formation of, from ammonia and the oxygen of the air (SCHWARZ), 1876, i., 878.

ferric oxide as a generator of, and on the origin of the nitre in some of the experiments of Cloëz (PESCI), 1876, i., 188.

manufacture of (GOEBEL), 1876, ii., 332.

spectrum of (SETTEGAST), 1879, A., 829.

electric conductivity of (KOHLE-RAUSCH and GEOTRIAN), 1875, 1149; 1876, i., 182.

**Nitric acid**, heat of formation of (THOMSEN), 1880, A., 603.

heat of dilution of (BERTHELOT), 1874, 762.

melting-point of (BERTHELOT), 1878, A., 263.

decomposition of, by heat (CARIUS), 1874, 124.

action of, on barium phosphates and arsenates (DUVILLIER), 1876, i., 519.

action of, on *tribromophenol* (ARMSTRONG and HARROW), 1876, i., 477.

action of dilute, on brucine (SHENSTONE), 1877, ii., 499.

action of, on *n*-butylic sulphide (GRABOWSKI), 1875, 628, 1175.

action of, on carbanilide (FLEISCHER and NEMES), 1877, ii., 886.

action of, on *trichloracetamide* (TOMMASI and MELDOLA), 1874, 316.

action of fuming, on *diethylallylene* (PINNER), 1876, i., 57.

some products of the action of red fuming, on coal gas (AKESTORIDES), 1877, ii., 287.

and silver nitrate, action of, on certain codeine and morphine derivatives (WRIGHT), 1873, 1087.  
action of occluded hydrogen on (GLADSTONE and TRIBE), 1879, T., 175.

action of, on lead chromate (DUVILLIER), 1873, 1005.

action of, on lead phosphates and arsenates (DUVILLIER), 1876, i., 519.

action of, on mercuric sulphide (GRAMP), 1877, i., 282.

action of, on metals (ACWORTH), 1875, 828; (ARMSTRONG and ACWORTH), 1877, ii., 54; (MAUMENÉ), 1881, A., 876.

action of metallic nitrates on (DITTE), 1880, A., 153.

action of, on paraffin (POUCHET), 1875, 50.

action of, on potassium permanganate (WRIGHT and MENKE), 1880, T., 23.

action of, on stilbene (LORENZ and BLUMENTHAL), 1876, i., 242.

reduction of, by the copper-zinc couple under various conditions (WILLIAMS), 1881, T., 101.

reduction of, and oxidation of acetic acid, with production of alcohol, by the influence of certain microzymes (BÉCHAMP), 1876, ii., 540.

**Nitric acid**, iodine in (HILGER), 1876, i., 442.

oxidation of butyric, caproic, succinic and oxalic acids by (ERLENMEYER, SIGELAND BELLI), 1874, 980; 1876, i., 893.

in the vitriol manufacture (DAVIS), 1878, A., 615.

introduction of, into the sulphuric acid chamber along with the steam (LIEBIG), 1880, A., 196.

loss of, in the manufacture of sulphuric acid (HASENBACH), 1874, 822.

inflammation by (KRAUT), 1881, A., 475.

combinations of, with ammonia (TROOST), 1882, A., 1162.

**Nitrates** in plants and soils. See under Agricultural Chemistry.

amount of, in the waters of the Nile (D'ABBADIE), 1879, A., 905.

in the water of the Seine (BOUSSINGAULT), 1876, ii., 181.

general method of preparing ethereal (CHAMPION), 1874, 886.

heat of formation of (BERTHELOT), 1880, A., 522; (THOMSEN), 1880, A., 603.

heats of formation and solution of metallic (THOMSEN), 1880, A., 82.

action of acetic chloride on (ARMSTRONG), 1873, 683.

action of, on nitric acid (DITE), 1880, A., 153, 154.

action of zinc and spongy copper on (THORPE), 1873, 545.

reduction of, by bacteria (GRIESSMAYER), 1876, ii., 650.

reduction of, by sewage, spongy iron, and other agents (HATTON), 1881, T., 258.

and nitrites, does ozone combine with free nitrogen in presence of alkalis to form? (BERTHELOT), 1877, i., 438.

attempt to form double salts of silver nitrate and other (RUSSELL and MASKELYNE), 1877, ii., 843.

See also Agricultural Chemistry.

**Nitric acid**, detection, estimation and separation:—

detection of (BOLAS), 1874, 387; (LINDO), 1877, ii., 919.

false reaction of (WITTSTEIN), 1876, ii., 652.

diphenylamine as a test for (KOPP), 1873, 91; (MARTIN), 1877, ii., 918.

Schönbein's test for (STORER), 1877, ii., 219, 799.

**Nitric acid**, detection, estimation and separation:—

detection of, in presence of nitrous acid (PICCINI), 1880, A., 139.

detection of, in lemon-juice (DOTTO-SCRIBANI), 1878, A., 914.

detection of, in phosphoric acid (HAGER), 1873, 940.

detection of, in waters (KAEMMERER), 1875, 912; (VOGEL), 1876, i., 744; (FRESENIUS), 1876, ii., 544; (WAGNER), 1882, A., 556.

detection of iodine in (HILGER), 1876, i., 442.

estimation of (MOHR), 1873, 91; (SCHULZE), 1873, 529; (JOULIE), 1873, 530; (BOLAS), 1874, 387; (JEAN), 1876, ii., 550; (PELLET), 1877, i., 227; (LUNGE), 1877, ii., 642; 1878, A., 469; 1879, A., 79; (EDER), 1877, ii., 643; (WAGNER), 1880, A., 574; (PICCINI), 1881, A., 1080; (v. DUMREICHER), 1882, A., 361.

estimation of, in very dilute solutions (LEEDS), 1879, A., 1062.

estimation of, as ammonia (THORPE), 1873, 541; (GRETE), 1879, A., 79.

estimation of, as nitric oxide (WARINGTON), 1879, T., 379; 1880, T., 468; 1882, T., 345.

estimation of, by indigo (FISCHER), 1873, 1054; 1875, 481; (WARINGTON), 1877, i., 735; 1879, T., 578.

estimation of, by potassium dichromate (PFEIFFER), 1879, A., 399.

estimation of, in plants, fodders and soils. See under Agricultural Chemistry.

estimation of, in waters (VAN BEMMELEN), 1873, 90; (THORPE), 1873, 545; (FISCHER), 1873, 1054; 1875, 481; (HOFFMANN), 1876, i., 435; (WARINGTON), 1879, T., 578; (EDER), 1879, A., 274; (SETTEGAST), 1879, A., 829; (WILLIAMS), 1881, T., 100, 144; (KNIGHTS; PERKINS), 1881, A., 1173.

Thorpe and Bunsen's methods for the estimation of nitrogen in (JOHNSON), 1877, ii., 799.

separation of, from the living organism (RÖHMANN), 1882, A., 100.

separation of, from nitrous acid (PICCINI), 1881, A., 1080.

See also Agricultural Chemistry.

**Nitric anhydride**. See Nitrogen pentoxide.

**Nitric oxide.** See Nitrogen dioxide.  
peroxide. See Nitrogen peroxide.

**Dinitric acid** ("nitric acid sub-hydrate") ( $\text{H}_2\text{N}_4\text{O}_{11}$ ) (WICHELHAUS), 1873, 173.

**Nitrous acid**, occurrence of, amongst the products of combustion of coal-gas and hydrogen flames (WRIGHT), 1879, T., 42.  
formation of, in nature (CARIUS), 1875, 128.  
preparation of (STREIFF), 1873, 37; (LUNGE), 1879, A., 200.  
heat of formation of (THOMSEN), 1880, A., 603.  
action of, on acetanilide (FISCHER), 1876, ii., 205.  
action of, on alizarin (NIENHAUS), 1876, ii., 84.  
action of, on substituted amides (FISCHER), 1877, ii., 607.  
action of, on dimethylaniline (v. BAEYER and CARO), 1875, 83.  
action of, on ethylaniline (GRIESS), 1874, 587.  
action of, on plants (LIEBERMANN), 1874, 693.  
behaviour of, with sulphuric acid (LUNGE), 1880, A., 91.  
dyes produced by the action of, on the aromatic oxy-compounds (LIEBERMANN), 1875, 167.  
oxidation of, by ozone and by moist oxygen (BERTHELOT), 1879, A., 9.  
appearance of, during the evaporation of water (WARINGTON), 1881, T., 229.

**Nitrite**, indications of a, in saliva (BÖTTGER), 1873, 536.

**Nitrites**, formation of, by bacteria (MEUSEL), 1876, i., 189.

preparation of alkaline (ETARD), 1877, i., 685.

action of acetic chloride on (ARMSTRONG), 1873, 683.

and nitrates, does ozone combine with free nitrogen in presence of alkalis to form? (BERTHELOT), 1877, i., 438.

nitrification of (WARINGTON), 1879, T., 452.

**Nitrous acid**, detection, estimation and separation:—

detection of, phloroglucinol and (WESELSKY), 1876, i., 964.

diphenylamine as a test for (KOPP), 1873, 91; (MARTIN), 1877, ii., 918.

detection of, in dilute solutions (FRESENIUS), 1874, 1178.

detection of, in the blood (BERTONI and RAIMONDI), 1882, A., 1231.

**Nitrous acid**, detection, estimation and separation:—

detection of, in waters (KAEMMERER), 1874, 1006; 1875, 912; (PLUGGE), 1876, i., 438; (LEEDS), 1879, A., 964.

estimation of (LUNGE), 1877, ii., 642; 1878, A., 469; 1879, A., 79; (PREUSSE and TIEMANN), 1878, A., 606; (PICCINI), 1881, A., 1080; (DAYV), 1882, A., 1317.

estimation of, by means of m-phenylenediamine (GRIESS), 1878, A., 605.

estimation of, in waters (FISCHER), 1875, 185; (PLUGGE), 1876, i., 438; (NICHOLSON), 1876, i., 744; (HERCHER), 1877, ii., 647; (LEEDS), 1879, A., 964.

separation of, from the living organism (RÖHMANN), 1882, A., 100.

separation of, from nitric acid (PICCINI), 1881, A., 1080.

**Nitrous anhydride.** See Nitrogen trioxide.

oxide. See Nitrogen monoxide.

**Hyponitrous acid** (VAN DER PLAATS), 1878, A., 269.

basicity of (ZORN), 1882, A., 926.

**Hyponitrites**, method of forming (ZORN), 1880, A., 4; 1882, A., 1027.

preparation of (MENKE), 1878, T., 401.

**Hyponitric anhydride**, chloro-, Gay-Lussac's (GOLDSCHMIDT), 1881, A., 506.

**Nitrogen oxysulphate.** See Nitrosyl sulphate.

sulphide, heat of formation of (BERTHELOT and VIELLE), 1882, A., 460.

action of chlorine on (DEMARÇAY), 1881, A., 346.

new derivative of (DEMARÇAY), 1881, A., 222, 976.

thiochloride (DEMARÇAY), 1881, A., 346.

**Nitrogen**, detection and estimation:—

extension of Dietrich's table for the calculation of (TRACHSEL), 1880, A., 346.

apparatus for the collection of, in elementary analysis (STAEDEL), 1881, A., 192.

detection of, in carbon compounds (SPICA), 1880, A., 348.

detection of, in iron and steel (ALLEN), 1879, A., 1017; 1880, A., 749.



**Nitrogen, estimation:—**

estimation of (PIUGGARI; JOHNSON), 1874, 187; (SACHSSE and KORMANN), 1875, 784; (THIBAUT), 1876, i., 433; (ZULKOWSKI), 1876, ii., 651; 1880, A., 753; (SCHULZE), 1877, ii., 917; (MAKRIS), 1877, ii., 917; (HANKÓ, FLEISCHER and NEMES), 1879, A., 554; (RUFFLE), 1879, A., 961; (PREHN and HORNBERGER), 1880, A., 348; (LUDWIG; SCHIFF), 1880, A., 679; (SCHWARZ), 1881, A., 62.

estimation of nitric (KINNEAR), 1882, A., 1317.

simultaneous estimation of carbon, hydrogen, and (HEMPEL), 1879, A., 278.

estimation of, by combustion, including the nitro-compounds (RUFFLE), 1881, T., 87.

estimation of, by means of hypobromite (KNOP), 1876, i., 740.

estimation of, by soda-lime (JOHNSON and JENKINS), 1879, A., 962.

estimation of, in carbon compounds (MARCKER), 1873, 532; (DUPRÉ), 1876, ii., 115; (GRETE), 1879, A., 80; (GROVES), 1880, T., 500.

estimation of, in gas analysis (BUNTE), 1878, A., 808.

estimation of, in iron and steel (ALLEN), 1879, A., 1017; 1880, A., 749.

estimation of, in milk, whey, and cheese (MUSSO), 1877, ii., 233, 941.

estimation of, in nitrates (JOHNSON), 1877, ii., 799.

estimation of, in explosive ethereal nitrates (TSCHELZOFF), 1880, A., 355.

estimation of, in the nitroglycerol of dynamite (SAUER and ADOR), 1878, A., 165, 611.

estimation of, in plants and fodders. See under Agricultural Chemistry.

estimation of, in proteids (SEEGEN and NOWAK), 1873, 1063; 1875, 192; (RITTHAUSEN), 1874, 296; (KREUSLER), 1874, 386, 1106; 1880, A., 350; (MÄCKER and ABESSER), 1874, 392; (LIEBERMANN), 1876, ii., 216; (RITTHAUSEN and SETTEGAST), 1878, A., 533.

estimation of, in albuminates (KREUSLER), 1880, A., 350.

estimation of, in the ash of Virginian tobaccos (IRBY and CABELL), 1875, 289.

**Nitrogen, estimation:—**

estimation of, in urine (WASHBURNE), 1876, ii., 668; (V. SCHRÖDER), 1879, A., 829; (FLAVARD), 1881, A., 192.

estimation of organic, in waters (PELET), 1880, A., 62; (WILLIAMS), 1881, T., 144; (BLUNT), 1882, A., 100.

**Nitrogen.** See also Agricultural Chemistry.

**Nitrogenous constituents of urine,** estimation of (BYASSON), 1882, A., 1330.

**Nitroglycerol.** See Glyceryl trinitrate. "**Nitroglycogen**" (LUSTGARTEN), 1882, A., 159.

**Nitro-group,** position taken by, on nitrating the *dibromotoluenes* (NEVILLE and WINTHER), 1881, T., 83.

dependence of the action of, in favouring the displacement of chlorine, bromine, iodine, etc., in benzene derivatives (KÖRNER), 1876, i., 240.

influence of a, on a sulphonic group in the aromatic series (POST), 1880, A., 238; 1881, A., 91.

**Nitrohemipinic acid and its salts** (PRINZ), 1882, A., 402.

*di***Nitroheptylene** (MORRIS), 1882, T., 175.

*di***Nitrohexane** (CHANCELL), 1882, A., 825.

**Nitrohexoic acid.** See Hexoic acid.

*hexa***Nitrohomofluorescein and hexa-nitrohomofluoresceincyanic acid** (SCHWARZ), 1880, A., 552.

*di***Nitrohydrazophenetol** (ANDREAE), 1880, A., 466.

**Nitrohydrochloric acid.** See Aqua regia.

*di***Nitrohydrocotone** (v. JOBST and HESSE), 1880, A., 327.

1:3-*di***Nitro-2-hydroxyanthraquinone** and its salts (SIMON), 1881, A., 608.

3-**Nitro-*p*-hydroxybenzaldehyde** (MAZZARA), 1877, ii., 781; (HERZFELD), 1878, A., 65.

**Nitrohydroxybenzeneazobenzene-*p*-sulphonic acid** (GRIESS), 1879, A., 316.

*di***Nitrohydroxybenzeneazophenolsulphonic acid** (STEBBINS), 1880, A., 881.

**Nitrohydroxybenzoic acid.** See Hydroxybenzoic acid.

*o*-**Nitro-*p*-hydroxydiphenyl** (SCHULTZ and STRASSER), 1881, A., 605; (SCHULTZ, SCHMIDT and STRASSER), 1881, A., 911.

- p*-Nitro-*p*-hydroxydiphenyl (SCHMIDT and SCHULTZ), 1881, A., 911.
- 4-Nitrohydroxyethoxybenzene (*ethyl-nitroresorcinol*) (WESELSKY and BENEDIKT), 1881, A., 727.
- 4:6-*di*Nitrohydroxyethoxybenzene (ARONHEIM), 1879, A., 465.
- Nitro-*p*-hydroxyethoxybenzene (*nitro-ethylquinol*) (WESELSKY and BENEDIKT), 1881, A., 1139.
- 4-Nitrohydroxymethoxybenzene (*methylnitroresorcinol*) (WESELSKY and BENEDIKT), 1881, A., 727.
- Nitro-*p*-hydroxymethoxybenzene (*nitro-methylquinol*), *mono*- and 2:5-*di*- (WESELSKY and BENEDIKT), 1881, A., 1139.
- 3-Nitro-2-hydroxy- $\alpha$ -naphthaquinone (*nitronaphthalic acid*) (DIEHL and MERZ), 1878, A., 322, 888.
- di*Nitrohydroxyphenylguanidine. See Guanidodinitrophenol.
- di*Nitrohydroxyterephthalic acid (BURKHARDT), 1878, A., 73.
- Nitrolactic acid, spontaneous oxidation of (HENRY), 1880, A., 237.
- Nitrolefines (HAITINGER), 1881, A., 1114.
- $\psi$ -Nitroles (MEYER and LOCHER), 1874, 983; 1875, 445, 1182; 1876, i., 904.
- Nitromesidine (HÜNER), 1878, A., 144; (KNECHT), 1882, A., 1200.
- Nitromesitol (KNECHT), 1882, A., 1200.
- Nitromesitylene (BIEDERMANN and LEDOUX), 1875, 569.
- Nitromesitylenic acids,  $\alpha$ - and  $\beta$ -, and their salts (SCHMITZ), 1879, A., 155.
- $\beta$ -Nitromesitylenic acid, melting point of (JACOBSEN), 1879, A., 248.
- Nitrometer (LUNGE), 1879, A., 79.
- Nitromethanes. See Methane.
- tri*Nitromethane. See Nitroform.
- Nitro-*m*-methoxypropylbenzoic acid (PATERNO and CANZONERI), 1880, A., 884.
- Nitro-3-methoxy-*p*-toluic acid (PATERNO and CANZONERI), 1880, A., 246, 884; (CANZONERI), 1881, A., 269.
- p*-Nitromethylbenzaldoxime (GABRIEL and MEYER), 1882, A., 188.
- di*Nitromethyl-*o*-coumaric acid (PERKIN), 1881, T., 417.
- Nitro-*p*-methylidiphenyls, *mono*- and *di*- (CARNELLEY), 1876, i., 21.
- Nitromethyleneprotocatechuic acid (*nitropicronylic acid*) (V. JOBST and HESSE), 1878, A., 733.
- Nitromethylenepyrocatechols, *mono*- and *di*- (V. JOBST and HESSE), 1878, A., 733.
- Nitromethylquinol. See Nitro-*p*-hydroxymethoxybenzene.
- 6-Nitromethylthymol, action of nitric acid on (PATERNO and CANZONERI), 1880, A., 883.
- 3:5-*di*Nitromethyl-*p*-toluidine (THOMSEN), 1878, A., 218.
- Nitronaphthalene. See Naphthalene.
- Nitronaphthalenesulphonic acid, amide and chloride. See Naphthalenesulphonic acid, amide and chloride.
- Nitronaphthalic acid. See 3-Nitro-2-hydroxy- $\alpha$ -naphthaquinone.
- 3-Nitro- $\beta$ -naphthaquinone (STENHOUSE and GROVES), 1878, T., 416.
- Nitronaphthoic acid. See Naphthoic acid.
- Nitronaphthol. See Naphthol.
- 2:4-*di*Nitro- $\alpha$ -naphthol-2'-sulphonic acid (LAUTERBACH), 1882, A., 63.
- 4'-Nitro- $\alpha$ -naphthonitrile (GAEFF), 1881, A., 822.
- Nitronaphthylamine. See Naphthylamine.
- $\alpha$ -Nitronaphthylamine, diazo-compound of ("nitramidolnaphthylimide") (LIEBERMANN and DITTLER), 1873, 1232.
- Nitro-*o*-nitrosoamidoethylphenetol (FÜRSTER), 1880, A., 464.
- di*Nitropentane (CHANCEL), 1882, A., 824.
- Nitrophenanthraquinone. See Phenanthraquinone.
- Nitrophenanthrenes,  $\alpha$ -,  $\beta$ -, and  $\gamma$ - (SCHMIDT), 1879, A., 941.
- Nitrophenazine, formation of (CLAUS), 1875, 647.
- Nitrophenetol. See Phenetol.
- Nitrophenols. See Phenol.
- 2:4:6-*tri*Nitrophenol. See Picric acid.
- "*di*Nitrophenolmethylguanidine" (GRIESS), 1882, A., 969.
- Nitrophenolsulphonic acid. See Phenolsulphonic acid.
- o*-Nitrophenoxyacetic acid, behaviour of, with reducing agents (THATE), 1882, A., 849.
- Nitrophenoxyacetic acids, *o*- and *p*- (FRITZSCHE), 1880, A., 319.
- mono*- and *di*- (FRITZSCHE), 1879, A., 322.
- 2:4-*di*Nitrophenyl allyl oxide (WILLGERODT), 1879, A., 717.
- Nitrophenyl amido- and brom-ethyl oxides, *o*-, *m*-, and *p*- (WEDDIGE), 1881, A., 1137.
- 2:4-*di*Nitrophenyl glyceryl oxide (WILLGERODT), 1879, A., 717.
- 2:4-*di*Nitrophenyl mercaptan (WILLGERODT), 1878, A., 141.

- Nitrophenyl nitro-*p*-tolyl ketone**, formation of (PLASCUDA and ZINCKE), 1875, 69.
- Nitrophenyl tolyl ketones**, *mono*-, *di*-, and *tri*-, formation of (PLASCUDA and ZINCKE), 1875, 69.
- Nitrophenylacetic acid**. See Phenylacetic acid.
- o*-Nitrophenylacetylene**, action of potassium ferricyanide on the copper compounds of ethylic acetoacetate and (v. BAEYER and LANDSBERG), 1882, A., 972.
- p*-Nitrophenylacetylene** (DREWSSEN), 1882, A., 847.
- Nitrophenylacetylenes**, *o*- and *p*- (MÜLLER), 1882, A., 840.
- Nitrophenyl*di*bromopropionic acid**. See Nitrocinnamic acid.
- 3:5-*di*Nitro-*o*-phenylenediamine** (NORTON and ELLIOTT), 1878, A., 417.
- Nitro-*m*-phenylenediamine**, formation of (BARBAGLIA), 1875, 273.
- di*Nitrophenylene- $\alpha$ -naphthylene oxide** (v. ARX), 1881, A., 282.
- tri*Nitro-*m*-phenylenetrimethyldiamine**, nitrosamine of (WURSTER and MORLEY), 1880, A., 111.
- Nitro-*p*-phenylenetrimethyldiamine**, nitrosamine of (WURSTER and SCHÖBIG), 1880, A., 111.
- o*-Nitrophenylglycidic acid** (v. BAEYER), 1881, A., 275.
- p*-Nitrophenylglycidic acid** (ERLENMEYER), 1882, A., 191.
- m*-Nitrophenylglyoxylamide** (THOMPSON), 1881, A., 814.
- tri*Nitrophenylic acetate** (*acetyl picrate*) (TOMMASI and DAVID), 1873, 1238.
- Nitrophenylic benzoates**, *o*- and *p*- (SCHIAPELLI), 1881, A., 603.
- di*Nitrophenyl- $\alpha$ -naphthylamine** (STREIFF), 1881, A., 176.
- Nitrophenylnitraniline**. See Phenylnitraniline.
- tri*Nitrophenyl-*p*-nitraniline**. See Picrylnitraniline.
- 2:4-*di*Nitrophenyl-*m*-phenylenediamine** (LEYMANN), 1882, A., 1057.
- m*-Nitrophenylphthalimide** (GABRIEL), 1879, A., 323.
- Nitrophenylpropionic acid**. See Phenylpropionic acid.
- o*-Nitro- $\beta$ -phenylpropionic acid** (GABRIEL and ZIMMERMANN), 1881, A., 274.
- m*-Nitro- $\beta$ -phenylpropionic acid** (GABRIEL and STEDEMAN), 1882, A., 1073.
- 2:4-*di*Nitro- $\beta$ -phenylpropionic acid** (GABRIEL and ZIMMERMANN), 1879, A., 640; 1881, A., 274.
- 2:4-*di*Nitrophenyltolylene-3:4-diamine** (LEYMANN), 1882, A., 1057.
- o*-Nitrophenylurethane**. See Ethylic *o*-nitrophenylcarbamate.
- p*-Nitrophenylxanthamide**. See Ethylic *p*-nitrophenyl- $\psi$ -thiocarbamate.
- tri*Nitrophloroglucinol** and its salts (BENEDIKT), 1879, A., 57.
- Nitrophosphenylic acid** and its salts (BENZINGER), 1875, 1205; (MICHAELIS and BENZINGER), 1876, i., 599; 1878, A., 57.  
action of soda-lime on (MICHAELIS and BENZINGER), 1876, ii., 204.
- Nitrophthalic acid**. See Phthalic acid.
- Nitrophthalide** (BEILSTEIN and KURBATOFF), 1879, A., 722.
- di*Nitroisophthalophenones**,  $\alpha$ - and  $\beta$ - (ADOR), 1880, A., 470.
- Nitroplanic acid** and its salts (PRINZ), 1882, A., 402.
- Nitropiperonylic acid** (*methylene-nitroprotocatechic acid*) (v. JOBST and HESSE), 1878, A., 733.
- Nitropodocarpic acids**, *mono*- and *di*- (OUDEMANS), 1874, 72.
- di*Nitropolyporic acid** (STAHLSCHMIDT), 1879, A., 383.
- Nitropropanes**. See Propane.
- $\beta$ -Nitropropionic acid**, preparation of (LEWKOWITSCH), 1880, A., 33.
- Nitropyrene** (BRACKEBUSCH), 1874, 573.
- Nitroprussides**, organic (BERNHEIMER), 1881, A., 883.  
of the alkaloïds (DAVY), 1881, A., 401.  
action of chlorine on (DAVY), 1878, A., 965.
- Nitropyrenes**, *mono*- and *di*- (GOLDSCHMIEDT), 1882, A., 206.
- 4-(?)-Nitropyrocatechol** (BENEDIKT), 1878, A., 575.
- Nitropyrocatechols**, 3- and 4(?)-(WESELSKY and BENEDIKT), 1882, A., 1200.
- Nitropyrogallol** (WESELSKY and BENEDIKT), 1882, A., 1200.
- Nitropyromecazone** (OST), 1882, A., 601.
- Nitropyromeconic acid** and its salts (OST), 1879, A., 307, 709.
- Nitropyromucic acid** (KLINKHARDT), 1882, A., 499.
- Nitropyruvic ureide** (GRIMAUX), 1875, 359, 450.
- Nitroquinacetophenone** (NENCKI and SIEBER), 1881, A., 591.

- di*Nitroquinine (RENNIE), 1881, T., 470.
- 2:5-*di*Nitroquinol (NIETZKI), 1878, A., 499.
- 1-Nitroquinoline (KOENIGS), 1879, A., 540.
- 1:3-*di*Nitroquinoline (LA COSTE), 1882, A., 979.
- Nitroquinone (ETARD), 1881, A., 583.
- tetra*Nitroquinone (NIETZKI), 1878, A., 426.
- Nitrorcinol. See Orcinol.
- Nitroresazurins, *mono*- and *di*- (BENE-DIKT and v. HÜBL), 1881, A., 1134.
- di*Nitroresazurin, action of potash on (BENE-DIKT and v. HÜBL), 1881, A., 1134.
- Nitroresorcinol. See Resorcinol.
- Nitrosalicylaldehyde (PHIPSON), 1877, ii., 617.
- Nitrosalicylaldehydes, 3- and 5- (MAZZARA), 1877, i., 597.
- Nitrosalicylamides, 3- and 5-, and their salts (HÜBNER), 1879, A., 381.
- 5-Nitrosalicylanilide (MENSCHING), 1880, A., 556.
- Nitrosalicylic acid. See Salicylic acid.
- Nitrosamines, aromatic (WITT), 1878, T., 202.
- iso*Nitroso-. See corresponding oxime.
- iso*Nitrosoacetone (MEYER and ZÜBLIN), 1878, A., 660; (MEYER), 1882, A., 940; (TREADWELL and STEIGER), 1882, A., 941; (MEYER and JANNY), 1882, A., 1047; (CERESOLE), 1882, A., 1052.
- Nitrosoalizarin (GIRARD and PAEST), 1879, A., 383.
- Nitrosoamarine (BORODIN), 1876, i., 269.
- o*-Nitrosoamidethylphenol (FÖRSTER), 1880, A., 463.
- Nitrosoanilidoacetic acid (SCHWEBEL), 1878, A., 795.
- Nitrosoanthrone (LIEBERMANN and LINDEMANN), 1881, A., 99; (LIEBERMANN and LANDSHOFF), 1881, A., 607.
- Nitrosoaustralene (TILDEN and SHENSTONE), 1877, i., 556.
- Nitrosobenzene (v. BAEYER), 1875, 452.
- Nitrosobenzylmalonic acid, and some of its salts (CONRAD and BISCHOFF), 1882, A., 39.
- Nitrosobetorcinol (STENHOUSE and GROVES), 1880, T., 404.
- Nitrosobutyric acid (WLEÜGEL), 1882, A., 944.
- Nitroso-compounds (MEYER), 1882, A., 940.
- of the fatty series (MEYER and ZÜBLIN), 1878, A., 487, 659.
- 4-Nitroso-*m* cresol (WURSTER and RIEDEL), 1880, A., 109; (BERTONI), 1882, A., 1198.
- Nitrosodi*isobutyl*amine, preparation of (LADENBURG), 1879, A., 704.
- Nitrosodihydropyromeconic acid (OST), 1879, A., 307.
- Nitrosodimethylaniline and its salts. See Dimethylaniline.
- Nitrosodimethyl-*m*-toluidine, constitution of (RIEDEL), 1880, A., 386.
- hydrochloride of (WURSTER and RIEDEL), 1880, A., 109.
- di*Nitrosodiphenyldiethylenediamine (MORLEY), 1880, A., 112.
- Nitrosodipyromeconic acid (OST), 1879, A., 708.
- Nitrosodi-*p*-tolylamine (COSACK), 1880, A., 714.
- Nitrosoethylacetone. See Methyl propyl ketone, oxime of.
- Nitrosoethylaniline (GRIESS), 1874, 587.
- Nitrosoethylindoxyllic acid (v. BAEYER), 1882, A., 198.
- Nitrosoferrous potassium sulphide (ROSENBERG), 1880, A., 10.
- Nitrosoglyoxaline (WYSS), 1878, A., 24.
- Nitrosguanidine (JOUSSELIN), 1878, A., 132; 1879, A., 613, 914.
- action of iodine on (v. RECHENBERG), 1878, A., 719.
- Nitrosohesperidene. See *l*-Carvoxime.
- Nitrosohydroanthrone (LIEBERMANN and LINDEMANN), 1881, A., 99.
- 4-Nitrosohydroxyethoxybenzene (*nitrosoethylresorcinol*) (ARONHEIM), 1879, A., 465.
- Nitroso- $\alpha$ -imidodipropionic acid (HEINTZ), 1873, 269; 1880, A., 801.
- Nitrosoketones, reduction of, with sodium amalgam (MEYER and TREADWELL), 1881, A., 796; (TREADWELL), 1881, A., 895.
- Nitrosomalonic acid (CONRAD and BISCHOFF), 1880, A., 629.
- iso*Nitrosomethylacetone. See Dimethyl diketone, oxime of.
- Nitrosomethylaniline (GABRIEL and MEYER), 1882, A., 189.
- Nitrosomethyl-*p*-bromo-*o*-nitrobenzene. See Bromo-*o*-nitrobenzaldoxime.
- Nitrosomethyl-*o*-nitrobenzene. See Nitrobenzaldoxime.
- Nitrosomethyl-*p*-toluidine (THOMSEN), 1878, A., 218.
- Nitrosonaphthalene (v. BAEYER), 1875, 452.
- Nitrosonaphthol. See Naphthaquinoneoxime.



- 1-Nitroso- $\beta$ -naphthol-3'-sulphonic acid, constitution and reactions of (MELDOLA), 1881, T., 40; A., 436.
- Nitrosanaphthyl-diethylamine (SMITH), 1882, T., 182.
- Nitrosanonic acid (*nitrosopelargonic acid*) (LIMPACH), 1878, A., 403.
- di*-Nitroso-orceinol (STENHOUSE and GROVES), 1877, i., 545.
- Nitroso-oxanthranol (LIEBERMANN and LANDSHOFF), 1881, A., 607.
- p*-Nitrosophenol. See Quinoneoxime.
- tri*-Nitrosophloroglucinol (BENEDIKT), 1879, A., 57.
- Nitrosopiperidine (SCHOTTEN), 1882, A., 983.  
reduction of (KNORR), 1882, A., 1115.
- $\alpha$ -Nitrosopropionic acid and its salts (MEYER and ZÜBLIN), 1878, A., 659; (GUTKNECHT), 1880, A., 712.  
new method of preparing, and the mode of action of hydroxylamine on (MEYER and JANNY), 1882, A., 1047.
- Nitrososodio-ferrous sulphide, so-called (PAWEL), 1880, A., 218.
- Nitrosoterebenthene (TILDEN and SHENSTONE), 1877, i., 556.
- Nitrosoterpene, crystallographic characters of (MASKELYNE), 1875, 518.
- Nitrosoterpenes, isomeric (TILDEN and SHENSTONE), 1877, i., 554.
- Nitrosotetrahydrocinchoninic acid (WEIDEL), 1882, A., 533.
- Nitrosothioferrates (ROSENBERG), 1880, A., 9.
- Nitrosothioglycollic acid (MALY and ANDREASCH), 1880, A., 630.
- Nitrosothiohydantoin, and its salts (MALY), 1879, A., 712.
- 6-Nitrosotymol and its derivatives (SCHIFF), 1876, i., 582; (WIDMAN), 1882, A., 728.  
crystalline form of (PANEbianco), 1880, A., 548.
- Nitrosotriacetoneamine. See Triacetoneamine nitrosamine.
- Nitrostearic acid (CHAMPION and PELLET), 1877, i., 590.
- p*-*di*-Nitrostilbene (STRAKOSCH), 1873, 890.
- di*-Nitrostilbenedicarboxylic anhydride (REIMER), 1882, A., 170.
- Nitrostrychnine. See Strychnine under Alkaloids.
- Nitrosuccinodi-*p*-tolyl-diamines, *di*- and *tetra*- (HÜBNER), 1882, A., 181.
- di*-Nitrosuccino- $\alpha$ -naphthylimide (HÜBNER), 1882, A., 181.
- Nitrosuccinophenylimides, *o*- and *p*- [m.p. 156° and 208°] (TAYLOR), 1876, i., 602; (HÜBNER), 1882, A., 181.
- Nitrosulphobenzoic acid. See Sulphobenzoic acid.
- Nitrosulphonic acid, preparation of (GIRARD and PABST), 1879, A., 383.  
behaviour of, with sulphuric acid (LUNGE), 1879, A., 771.  
denitrification of, by sulphurous acid (LUNGE), 1877, ii., 944.
- Nitrosulphonic anhydride (THORPE), 1882, T., 297; (THORPE and DYSON), 1882, T., 298.
- 5-Nitrosulphosalicylic acid (HÜBNER), 1878, A., 150.
- Nitrosyl bromides (*nitrogen oxybromides*) (TILDEN), 1874, 635.  
*tribromide* (MUIR), 1875, 844.  
chloride (*nitrogen oxychloride*), action of, on organic compounds (TILDEN), 1875, 514.  
action of, on phenol (TILDEN), 1874, 851.  
and aqua regia (TILDEN), 1874, 630.  
silver. See Silver hyponitrite.  
sulphate (*nitrogen oxysulphate*) (TILDEN), 1874, 631.
- Nitrosylsulphuric acid. See Nitrosulphonic acid.
- p*-Nitrotetramethyl-diamidotriphenyl-carbinol and -methane (FISCHER), 1882, A., 393.
- tetra*-Nitrotetranilidomethane (HÜBNER), 1878, A., 143.
- tetra*-Nitrotetraphenyl-tetramidomethane (HÜBNER), 1878, A., 143.
- 6-Nitrothymol, action of nitric acid on the methyl ether of (PATERNO and CANZONERI), 1880, A., 883.
- 2:6-*di*-Nitrothymol, ethyl ether of (LADENBURG and ENGELBRECHT), 1878, A., 60.
- Nitrotoluene. See Toluene.
- Nitro-*p*-toluene-*p*-azoxytoluenes, *mono*-, *di*- and *tri*- (PETRIEFF), 1873, 1027.
- 2:6-(?)-*di*-Nitrotoluene-4-sulphonamide (SCHWANERT), 1877, ii., 471.
- Nitrotoluenesulphonic acid. See Toluenesulphonic acid.
- di*-Nitro-*p*-toluenesulphonic chloride (SCHWANERT), 1877, ii., 471.
- Nitrotoluic acid. See Toluic acid.
- Nitrotoluidine. See Toluidine.
- Nitro-*p*-toluoxylidide (BRÜCKNER), 1881, A., 94; (HÜBNER), 1882, A., 504.
- Nitrotoluquinone (ETARD), 1881, A., 583.  
formation of (ETARD), 1877, ii., 476.
- Nitrotolylene-2:4-diamine (RUHMANN), 1882, A., 392.

- Nitrotolylene diglycollic acid** (SAAR-BACH), 1880, A., 391.  
**2-Nitro-*p*-tolylsuccinimide** (TAYLOR), 1876, i., 602.  
*tri-p*-**Nitrotribenzylamine** (STRACKOSCH), 1874, 78.  
**Nitro-1:2:3-triethoxybenzenes. *di*- and *tri*-** (WESELSKY and BENEDIKT), 1882, A., 53.  
**Nitrotrimethylamidophenol and its salts** (GRIESS), 1880, A., 637.  
*p-tri***Nitrotriphenylcarbinol** (E. and O. FISCHER), 1879, A., 384.  
*m*-**Nitro- $\alpha$ -triphenylguanidine**, formation of, by desulphuration of nitrodiphenylthiocarbamide in presence of aniline (BRÜCKNER), 1875, 166.  
*tri***Nitrotriphenylmethane** (E. and O. FISCHER), 1879, A., 384.  
*di***Nitro-*p*-uramidobenzoic acid** (GRIESS), 1873, 178.  
**Nitrous acid.** See under Nitrogen.  
**Nitrous anhydride.** See Nitrogen *tri*-oxide.  
 ether. See Ethylic nitrite.  
 oxide. See Nitrogen monoxide.  
**3-Nitroisovalero-*p*-toluidide**, action of hydrogen on (FRIEDERICI), 1879, A., 311.  
**Nitrovanillic acid** (TIEMANN and MATSMOTO), 1876, ii., 524.  
**5-Nitrovanillic acid** (WESELSKY and BENEDIKT), 1882, A., 1201.  
**6-Nitroisovanillic acid** (MATSMOTO), 1878, A., 502.  
**Nitroveratric acid and *mono*- and *tri*-nitroveratrols** (TIEMANN and MATSMOTO), 1876, ii., 524.  
*di***Nitroxanilides, *o*- and *p*-** (HÜBNER), 1882, A., 180.  
**Nitroxindole** (v. BAEYER), 1879, A., 938.  
**Nitroxylbenzeneazonnaphthalenesulphonic acid** (STEBBINS), 1880, A., 881.  
*hexa***Nitroxylhomofluorescein and nitrate** (SCHWARZ), 1880, A., 552.  
**Nitro-xylene.** See Xylene.  
**6-Nitro-*m*-xylene-4-sulphonic acid and its salts** (HARMSSEN), 1881, A., 49.  
**5-Nitro-1:3:4-xylenol** (LAKO), 1876, ii., 634.  
**Nitro-1:4:2-xylenols,  $\alpha$ -,  $\beta$ - and  $\gamma$ -, and their salts** (OLIVERI), 1882, A., 837.  
**Nitro-xylidines** (WROBLEWSKI), 1881, A., 420.  
 "Nitryl chloride," preparation of, by the action of phosphoryl chloride on certain nitrates (MILLS), 1873, 342  
**Nitryltropeine** (LADENBURG), 1882, A., 984.  
**Nobili's rings on gold** (SCHIEL), 1877, i., 677.  
**Noctilucin**, the phosphorescent principle of luminous animals (PIMPSON), 1876, i., 720.  
*Nodularia spumigera* (FRANCIS), 1878, A., 907.  
**Nohlite** (v. NORDENSKIÖLD), 1873, 479.  
**Nomenclature**, 1882, T., 247.  
 of some azo-compounds (HEUMANN), 1881, A., 163; 1882, A., 1061.  
 of carbonic acid derivatives, suggestions respecting (BERNTSEN), 1882, A., 381.  
**Nonoamide (ennoamide)** (SCHALFÉEFF), 1874, 255.  
**Nonoetylcarbamide (octylanonoylcarbamide)** (v. HOFMANN), 1882, A., 1052.  
*n*-**Nonoic acid (ennoic acid; pelargonic acid)** (KRAFFT), 1878, A., 292; (LIMPACH), 1878, A., 403; (BECKER), 1878, A., 853.  
 synthesis of (JOURDAN), 1880, A., 313.  
 nitroso- (LIMPACH), 1878, A., 403.  
 nitrile of (EICHLE), 1880, A., 230.  
**Nonoic acid (heptylactetic acid)** [b.p. 232°] (VENABLE), 1881, A., 82.  
*iso***Nonoic acid and its amide** (KULLHEM), 1875, 354, 884.  
**Nontronite** (KENNIGOTT), 1879, A., 31.  
**Nonylamine** (v. HOFMANN), 1882, A., 1054.  
**Nonyldecoylcarbamide.** See Deconylcarbamide.  
**Normethylhemipinic acid and its reactions** (BECKETT and WRIGHT), 1876, i., 300.  
**Normethylopianic acid, and chloro-** (PRINZ), 1882, A., 403.  
**Noropianic acid** (WRIGHT), 1877, ii., 525.  
*iso***Noropianic acid (aldehydoprocatechuic acid)** (TIEMANN and MENDELSON), 1877, ii., 488.  
**Norton's salt.** See Platinic chloride, hydrate of.  
**Norwegium**, a new metal (DAHL), 1879, A., 890; 1880, A., 93; (RAMMELSBURG), 1880, A., 611.  
**Novaculite.** See Hornstone.  
**Nucin.** See 4'-Hydroxy- $\alpha$ -naphthaquinone.  
**Nuclein** (WORM-MÜLLER), 1874, 82.  
 occurrence of, in the human brain (v. JAKSCH), 1877, i., 221.  
 digestibility of (BÓKAY), 1879, A., 814.  
 of milk (LJUBAVIN), 1878, A., 591; 1879, A., 735.  
 in beer-yeast (HOPPE-SEYLER), 1879, A., 811.  
 in yeast (LOEW), 1880, A., 816.  
**Numeite**, a new jewel (v. WAGNER), 1879, A., 184.

- Nutmeg oil**, proximate constituents of (WRIGHT), 1873, 549.  
lowest boiling hydrocarbon of (WRIGHT), 1873, 555, 693.
- Nutrition**, operation of electrocapillary forces in (BEQUEREL), 1875, 528.  
functions of peptones in (PLÓSZ), 1875, 95.  
with peptones (PLÓSZ and GYERGYAI), 1875, 1272.  
use of gelatin in (V. VOIT), 1873, 284; 1875, 94; (ORUM and DITZEL), 1881, A., 1049.  
of muscular and pulmonary tissue (MARCET), 1873, 77, 186.
- Nux vomica**, alkaloids of (SHENSTONE), 1881, T., 453.  
preparation of pulverisable extract of (BULLOCK), 1875, 388.
- O.**
- Oak**, tannic acid of the (OSER), 1876, ii., 88; (ETTI), 1881, A., 277.
- Oak-bark**, chemistry of (JOHANSON), 1877, i., 720.  
levulin in (ETTI), 1882, A., 158.  
tannin of (LOEWE), 1881, A., 901.  
influence of soil on the (FLEISCHER), 1880, A., 920.  
sugar from the (BÖTTINGER), 1881, A., 1021; 1882, A., 157.
- Oatmeal**, its composition and value as a food-stuff (DUJARDIN-BEAUMETZ and HARDY), 1874, 912.  
estimation of barley in (PATTINSON and STEAD), 1877, i., 348.
- Oats**. See under Agricultural Chemistry.
- Obituary notices**, 1873, 773; 1874, 1198; 1875, 1309; 1876, i., 617; 1877, i., 493; 1878, T., 227; 1879, T., 265; 1880, T., 251; 1881, T., 181; 1882, T., 235.
- Obsidian**, causes of tumefaction of, at high temperatures (BOUSSINGAULT and DAMOUR), 1873, 856.
- Octacetyl-diglucose**, -glucose, -lactose, -maltose, and -sucrose. See under Carbohydrates.
- n-Octane**, physical properties of (THORPE), 1880, T., 217.  
nitro- (EICHLEH), 1880, A., 229.
- Octane** (*hexamethylethane*) (LWOFF), 1881, A., 399.
- isoOctane** (*diisobutyl*), physical properties of (THORPE), 1880, T., 219.  
action of chlorine on, and alcohols of (WILLIAMS), 1879, T., 126.  
derivatives of (WILLIAMS), 1877, i., 541; 1879, T., 125.
- Octenyl alcohol** (*diethylallylcarbinol*) (SCHIROKOFF and SAYTZEFF), 1879, A., 214, 448.
- Octenyl alcohol** (*methylallylpropylcarbinol*) (SEMLJANITZIN), 1880, A., 372; 1881, A., 402.
- Octethyltetrasilicon ether** (TROOST and HAUTEFEUILLE), 1873, 746.
- Octinene** (*conylene*) (V. HOFMANN), 1881, A., 746.
- Octinoic acid**. See Diallylacetic acid.
- Octinyl alcohol** (*methylallylcarbinol*), synthesis of (SOROKIN and SAYTZEFF), 1876, i., 695; (SOROKIN), 1877, ii., 299.  
heat of combustion of (LUGININ), 1881, A., 871.
- Octodecylene** (*hexapropylene*) (PRUNIER), 1873, 486.
- Octoheptylcarbamide** (V. HOFMANN), 1882, A., 1053.
- Octohydronaphthalene** (WREDEN and DE ZNATOWICZ), 1877, ii., 899.
- n-Octoic acid** (*caprylic acid*) and its salts (VAN RENESSE), 1874, 1155; (CAHOUES and DEMARÇAY), 1879, A., 1037; (BURTON), 1882, A., 600.  
ammonium salt of, amide from (V. HOFMANN), 1882, A., 950.  
 $\alpha$ -amido-, and its salts (ERLENMEYER and SIGEL), 1874, 981; 1875, 1007, 1012.  
amide of (ERLENMEYER and SIGEL), 1875, 144, 1015.  
imido-, preparation, properties and salts of (ERLENMEYER and SIGEL), 1875, 1017.
- Octoic acid** (*dipropylacetic acid*) and its salts (BURTON), 1882, A., 600.
- Octoic acid**, a new (BUTLEROFF), 1878, A., 124.
- isoOctoic acid**, and its salts (WILLIAMS), 1879, T., 128.
- Octomethyltetramidotetraphenylethane** and its salts (SCHOOR), 1881, A., 160.
- Octonaphthene**. See Hexahydro-*m*-xylene.
- Octonitrile**,  $\alpha$ -amido-, preparation and salts of (ERLENMEYER and SIGEL), 1875, 1014.  
imido- (ERLENMEYER and SIGEL), 1875, 1016.
- Octoputetramorphine** (MAYER and WRIGHT), 1873, 214; (WRIGHT), 1873, 918.
- Octylacetic acid**. See Decoic acid.
- n-Octylamine** (EICHLEH), 1880, A., 229; (V. HOFMANN), 1882, A., 1054.
- sec-Octylamine** (JAHN), 1875, 1188.

- Octylene** (*diisobutylene*) (BUTLEROFF), 1877, i., 448; 1878, A., 121; (LERMONTOFF), 1878, A., 963; (DOBBIN), 1880, T., 241.  
 constitution of, action of hydrochloric acid on, and oxidation of (BUTLEROFF), 1878, A., 122.  
 action of nitric acid on (KONOWALOFF), 1881, A., 400.  
 oxidation of, by potassium permanganate (BUTLEROFF), 1882, A., 936.  
 bromide and iodide (BUTLEROFF), 1878, A., 122.
- n-Octylic alcohol** (MÖSLINGER), 1876, ii., 393.
- sec-Octylic alcohol** (*methylheptylcarbinol*) (SCHORLEMMER), 1874, 1029.  
 purification and boiling point of (NEISON), 1875, 207.  
 boiling point of (SCHORLEMMER), 1875, 209.  
 heat of combustion of (LUGININ), 1882, A., 567.
- Octylic alcohol** [b.p. 164°–168°] (WINOGRADOFF), 1878, A., 486.
- Octylic alcohol** (*isodibutol*) and its oxidation (BUTLEROFF), 1878, A., 122.
- "Octylic cyanide."** See *n*-Nonoic acid, nitrile of.
- n-Octylic iodide** (MÖSLINGER), 1876, ii., 393.
- Octylic nitrite** (EICHLER), 1880, A., 229.
- isoOctylic isooctate** (WILLIAMS), 1879, T., 129.
- Octylnitrolic acid** (EICHLER), 1880, A., 229.
- Octylnonoxylocarbamide.** See *Nonoetylcarbamide*.
- n-Octylphosphine** (MÖSLINGER), 1876, ii., 393.
- n-Octylsulphuric acid** and its salts (MÖSLINGER), 1876, ii., 393.
- sec-Octylthiocarbamide** (JAHN), 1875, 1188.
- Octylthiocarbimides, n- and sec.-** (JAHN), 1875, 1188.
- Oellacherite** (OELLACHER), 1874, 553.
- Enanthamido-acetic, -benzoic, and -hexoic sulphites.** See *Heptoic aldehyde*, compound of, with the sulphites of amido-acetic, -benzoic, and -hexoic acids.
- Enanthamidobenzoic acid** (SCHIFF), 1882, A., 304.
- Enanthic acid.** See *n*-Heptoic acid.
- Enanthodisulphureide.** See *Heptylideneithiocarbamide*.
- Enanthol.** See *Heptoic aldehyde*.
- Enanthylamine.** See *Heptylamine*.
- Enanthylic acid.** See *n*-Heptoic acid.
- Enocyanin** (*anolin*), preparation of (VARENNE), 1878, A., 438.  
 estimation of, in wine (GRASSI), 1874, 716; 1875, 484; (JEAN), 1882, A., 430, 1137.
- Enogallic acid**, estimation of, in wines (JEAN), 1882, A., 780.
- Enoglucol** (GAUTIER), 1881, A., 272.
- Enolin.** See *Enocyanin*.
- Enotannin** (GAUTIER), 1877, ii., 897.  
 estimation of, in wine (JEAN), 1882, A., 430, 1137.
- Ohm**, determination of (RAYLEIGH and SCHUSTER), 1881, A., 963.
- Oidium**, action of sulphur in destroying (POLLACCI), 1876, ii., 540.
- Oil-cake.** See under *Agricultural Chemistry*.
- Oil colours** and varnish, quick drying (ANON.), 1874, 728.
- Oil mordant**, substitute for, in dyeing Turkey-red (MÜLLER-JACOBS), 1874, 722; 1879, A., 187.
- Oil paint**, black, for wood and iron (GLASENAPP), 1878, A., 536.
- Oil paintings**, old, cleaning of (v. BIBRA), 1878, A., 260.
- Oils** and other non-conducting substances, electrochemical manipulation of (SYMONS), 1875, 328.  
 action of, on metals (WATSON), 1881, A., 772.  
 action of sulphuric acid recently heated to 320° on (MAUMENÉ), 1881, A., 971, 1084.  
 testing of (PINCHON), 1877, i., 348.  
 analysis of resin in commercial (RÉMONT), 1880, A., 683; 1881, A., 202.  
 estimation of acids in (GEISSLER), 1878, A., 534; (LAUGIER), 1879, A., 406; (CARPENTIN), 1881, A., 202.  
 hydrocarbon and fat, separation of (ALLEN), 1882, A., 108.
- Oils, animal, volatile**, obtained by the action of baryta on albumin (SCHÜTZENBERGER), 1879, A., 543.  
 estimation of the value of vegetable oils and (COLEMAN), 1874, 606.  
 cod-liver, presence of phosphorus and iodine in (CARLES), 1882, A., 673.  
 ash of light-coloured (VAN DER BURG), 1881, A., 124.  
 iodine-iron, preparation of (VAN DER BURG), 1881, A., 131.  
 analysis of (VAN DER BURG), 1881, A., 124.  
 See also *Oils, fatty*.



- Oils, blasting**, analysis of (HESS), 1875, 288.
- Oils, coal-tar**. See Coal-tar.
- Oils, essential and ethereal**. See Oils, vegetable.
- Oils, fatty or fixed**, properties of, and means of examining and detecting (GLÄSSNER), 1873, 945.
- action of, on copper (THOMSON), 1877, i., 237; (WATSON), 1878, A., 473.
- analysis of heavy mineral and resin oils and (RÉMONT), 1880, A., 683; 1881, A., 202.
- testing of (MERZ), 1877, ii., 228.
- method of detecting and estimating, in balsam of copaiba (MUTER), 1877, ii., 374.
- estimation of acid in (BURSTYN), 1873, 411; 1876, i., 769.
- separation of hydrocarbon oils from (ALLEN), 1882, A., 108.
- See also Oils, animal and vegetable, and Wax.
- Oils, lubricating** (ANON.), 1873, 1175.
- explosion of (WEBER), 1881, A., 1181.
- investigation of (FISCHER), 1880, A., 778.
- testing of (ANON.), 1878, A., 250; (DEITE), 1879, A., 292.
- for machinery, detection of rosemary and turpentine oils in (BURSTYN), 1875, 920.
- Oils, mineral**. See Petroleum.
- Oils, resin**. See Resin oils.
- Oils, sulphuretted**, having insecticide properties, preparation of (DE LA LOYÈRE and MÜNTZ), 1878, A., 825.
- Oils, vegetable** (KURBATOFF), 1875, 90; (GEISSLER), 1882, A., 120.
- chemistry of (DRAGENDORFF), 1880, A., 125.
- spectroscopic examination of (HARTLEY and HUNTINGTON), 1880, A., 201; 1881, A., 957; 1882, A., 130.
- oxidation of (KINGZETT), 1874, 511; 1875, 210; 1876, i., 243; 1877, i., 183; 1880, A., 51.
- formation of hydrogen dioxide during the slow oxidation of (RADULOWITSCH), 1874, 433; 1882, A., 433.
- ozone as a concomitant of the oxidation of (KINGZETT), 1874, 511.
- methods in use for determining the value of animal oils and (COLEMAN), 1874, 606.
- volatile, adulteration of (LEONHARDI), 1878, A., 811.
- adulteration of, with turpentine oil and its detection by means of alcohol (DRAGENDORFF), 1873, 1058.
- Oils, vegetable**, detection of alcohol in (BÖTTGER), 1873, 532; (ANON.), 1878, A., 684.
- volatile, detection of water in (LEUCHS), 1873, 296.
- estimation of (OSSE), 1876, i., 759.
- of *Achillea Ageratum* (DE LUCA), 1875, 773; 1877, i., 326.
- from *Aleurites triloba* (bancoûl nuts; candle nuts) kernels (CORENWINDER), 1876, i., 97; (HECKEL), 1876, i., 98.
- of almonds, tests for (BIEBER), 1878, A., 343.
- of bitter almonds, production of, from toluene (LIPPMANN and HAWLICZEK), 1877, i., 315; (JOB), 1882, A., 1146.
- chemical nature of (FILETI), 1879, A., 719.
- solubility of (FLÜCKIGER), 1876, i., 611.
- action of nascent hydrogen on (AMMANN), 1873, 1139.
- of Anda-assu (ANON.), 1882, A., 435.
- of *Anethum graveolens* ("dill-oil") (NIETZKI), 1874, 892.
- of *Angelica Archangelica* (BRUNNER), 1876, i., 939; (NAUDIN), 1882, A., 410; (MÜLLER), 1882, A., 496; (BEILSTEIN and WIEGAND), 1882, A., 1300.
- of true angostura bark (OBERLIN and SCHLAGDENHAUFFEN), 1877, ii., 932.
- of arnica root (SIGEL), 1874, 377.
- from the Californian bay tree (STILLMAN), 1880, A., 670.
- of bergamot (TILDEN and SHENSTONE), 1877, i., 560.
- of cacao. See Cocoa butter.
- cajeput (WRIGHT and LAMBERT), 1874, 619.
- calamus (KURBATOFF), 1874, 259; 1875, 91.
- liquid, from camphor, sublimation of (BECKETT and WRIGHT), 1876, i., 7.
- of Cananga (FLÜCKIGER), 1881, A., 916.
- of caraway, terpene from (TILDEN and SHENSTONE), 1877, i., 560.
- castor, behaviour of certain fluorescent bodies in (HORNER), 1875, 120.
- products of decomposition of (NEISON), 1874, 301, 507, 837.
- distillation of, under reduced pressure (KRAFFT), 1878, A., 292.
- insoluble fatty acids in (KRETZSCHMAR), 1878, A., 345.
- new acid from (KRAFFT), 1878, A., 292.

- Oils, vegetable,** castor, testing of (HAGER), 1877, ii., 364.  
 and other fixed oils, method of detecting and estimating, in balsam of copaiba (MUTER), 1877, ii., 374.  
 of Roman chamomile (DEMARÇAY), 1873, 1226.  
 constituents of (FITTIG and KÖBIG), 1879, A., 454.  
 acids in (FITTIG), 1877, i., 97; ii., 429; (FITTIG and KOPP), 1879, A., 454.  
 of chaulmoogra (DYMCK), 1876, ii., 207.  
 of cherry laurel (TILDEN), 1875, 1258.  
 of cinnamon leaves (SCHÄR), 1882, A., 1300.  
 of citronella (WRIGHT), 1874, 1, 318.  
 oxidation of, by air (KINGZETT), 1876, i., 243.  
 of cloves, action of baryta on (CHURCH), 1875, 113.  
 hydrocarbons from (BECKETT and WRIGHT), 1876, i., 6.  
 adulteration of (JACQUEMIN), 1876, i., 760.  
 of *Cochlearia officinalis* (v. HOFMANN), 1874, 792.  
 cocoa nut, purification of (HIRSCHBERG), 1876, i., 824.  
 of coffee (ČECH), 1881, A., 100.  
 of *Coriandrum sativum* fruit (GROSSER), 1882, A., 525.  
 from paracoto bark (v. JOBST and HESSE), 1880, A., 328.  
 of cotton seed (SCHEIBE), 1882, A., 436.  
 detection of, in olive oil (NICKELS), 1880, A., 925; (ZECCHINI), 1882, A., 662.  
 croton, volatile acids of (SCHMIDT and BERENDES), 1877, ii., 593; 1879, A., 221.  
 of cubebs (SCHULZE), 1873, 1148; (OGLIALORO-TODARO), 1876, ii., 642; (SCHMIDT), 1877, ii., 344.  
 of cumin, constituents of (WRIGHT), 1873, 694; (BEILSTEIN and KUPFER), 1874, 152; (GUARESCHI), 1874, 684.  
 of *Elæococca* (CLOËZ), 1876, i., 616; ii., 102.  
 of some *Ericaceæ* (KÖHLER), 1879, A., 641.  
 of *Erigeron canadensis* (VIGIER and CLOËZ), 1881, A., 1151; 1882, A., 64.  
 of *Eucalyptus Globulus* (FAUST and HOMEYER), 1875, 371; (HOMEYER), 1876, i., 244.  
**Oils, vegetable,** of gaultheria, testing of (ANON.), 1877, ii., 227.  
 from ginger (STENHOUSE and GROVES), 1877, i., 553; (THRESH), 1880, A., 359; 1882, A., 626.  
 in grass-seeds, and its relation to their germination (BREIHOIZ), 1880, A., 342.  
 of hemp (VALENTE), 1881, A., 284.  
 of *Heracleum Sphondylium* (MÖSLINGER), 1877, ii., 425.  
 of *Hydnocarpus Wightiana* (DYMCK), 1876, ii., 207.  
 of *Illicium religiosum* fruit and seeds (EIJKMAN), 1881, A., 918.  
 of *Iris florentina* (HAGER), 1876, ii., 104; (FLÜCKIGER), 1877, ii., 644.  
 of juniper berries (DONATH), 1873, 1051.  
 of *Laurocerasus*, chemical nature of (FILETI), 1879, A., 719.  
 of lavender (BRUYLANTS), 1880, A., 50.  
 of lemon (OPPENHEIM), 1873, 1226; (TILDEN and SHENSTONE), 1877, i., 560; (TILDEN), 1879, A., 386.  
 commercial (FLAWITZKY), 1881, A., 437.  
 discrimination between pressed and distilled (SCHACK), 1873, 1059.  
 of *Lepidium sativum* (v. HOFMANN), 1875, 170.  
 of limes (*Citrus Limetta*) (WRIGHT and PIESSE), 1877, ii., 548.  
 of linaloes (*Licari kanadi*) (MORIN), 1881, A., 738; 1882, A., 737.  
 of linseed, bleaching of (PUSCHER), 1873, 100.  
 reaction of, with sulphuric acid (CROSS and BEVAN), 1882, T., 108.  
 adulterated (MASON), 1881, A., 473.  
 of marjoram (BRUYLANTS), 1880, A., 50.  
 Cretan (JAHNS), 1880, A., 112.  
 of mint, a new reaction of (ROUCHER), 1875, 371.  
 of mustard. See Allylthiocarbimide.  
 of the leaves of *Myrcia acris* (MARKOE), 1878, A., 799.  
 of *Nasturtium officinale* (v. HOFMANN), 1874, 793; (CHURCH), 1877, ii., 210.  
 of nutmeg, constituents of (WRIGHT), 1873, 549.  
 lowest boiling hydrocarbon of (WRIGHT), 1873, 555, 693.  
 of olibanum (KUREATOFF), 1875, 90.

**Oils, vegetable, olive, residues from the manufacture of** (SESTINI and DEL TORRE), 1875, 1049.  
 estimation of, in Turkey-red dyeing (KOPP), 1876, i., 761.  
 adulteration of (CONROY), 1881, A., 945.  
 testing of (MERZ), 1877, ii., 228.  
 detection of cotton seed oil in (NICKELS), 1880, A., 925.  
 test for distinguishing cotton-seed oil from (ZECCHINI), 1882, A., 662.  
 orange-peel, constituents of (WRIGHT), 1873, 552.  
 of *Origanum creticum* and *O. hirtum* (JAHNS), 1880, A., 112.  
 of *Origanum vulgare*, constituents of (JAHNS), 1881, A., 95.  
 palm, estimation of neutral fats, and palmitic and oleic acids in (SEAR), 1882, A., 342.  
 of papaya (PECKOLT), 1880, A., 129.  
 of parsley, terpene of (V. GERICHTEN), 1876, ii., 78.  
 of parsnip (VAN RENESSE), 1873, 642.  
 from the fruit of *Pastinaca sativa* (VAN RENESSE), 1873, 642.  
 of peppermint (MORIYA), 1881, T., 82.  
 colouration of, by chloral hydrate (V. WASOWICZ), 1878, A., 344.  
 reactions of acids with, and their bearing on the formation of chlorophyll (FRÉBAULT), 1874, 1172.  
 adulteration of, with castor oil and alcohol (ANON.), 1873, 1273.  
 test for (JEHN), 1875, 385; (SCHACK), 1882, A., 667.  
 of *Pinus pumilio* (ATTERBERG), 1882, A., 410.  
 of *Pinus sylvestris* (TILDEN), 1878, T., 80.  
 of *Pistacia Lentiscus* (FLÜCKIGER), 1882, A., 208.  
 of poplar (PICCARD), 1873, 1237; 1875, 1191.  
 poppy and rape, bleaching of (PUSCHER), 1873, 100.  
 from the embryo of rice (PAVESI and ROTONDI), 1875, 178.  
 of rosemary and its reactions (BRUYLANTS), 1879, A., 725.  
 preparation of (ČECH), 1879, A., 97.  
 of sage (SUGUIRA and MUIR), 1878, T., 292; (MUIR), 1880, T., 678.  
 optical properties of constituents of (MUIR), 1880, T., 688.  
 terpenes from (TILDEN and SHENSTONE), 1877, i., 557.

**Oils, vegetable, of garden sage** (*Saturcia hortensis*), occurrence of carvacrol in (JAHNS), 1882, A., 1065.  
 of savin, terpene from (TILDEN and SHENSTONE), 1877, i., 560.  
 of savory (HALLER), 1882, A., 737.  
 of spike (BRUYLANTS), 1880, A., 50.  
 of the root of *Spiraea Ulmaria* (NIETZKI), 1874, 897.  
 of storax, constituents of (LAUBENHEIMER), 1873, 65; (HAGER), 1874, 1017; (V. MILLER), 1876, i., 612, 939; 1878, A., 159; (VAN'T HOFF), 1876, i., 703; 1877, i., 214, 478.  
 of tansy (*Tanacetum vulgare*) (BRUYLANTS), 1878, A., 157, 512.  
 of wild thyme (FEBVE), 1882, A., 524.  
 of *Thymus Serpyllum* (BURI), 1878, A., 792.  
 constituents of (JAHNS), 1881, A., 95; 1882, A., 1065.  
 of *Tropaeolum majus* (V. HOFMANN), 1874, 792.  
 Turkey-red (MÜLLER-JACOBS), 1874, 722; 1879, A., 187.  
 analysis of (STEIN), 1879, A., 984; (ANON.), 1882, A., 430.  
 of turpentine (PAPASOGLI), 1877, i., 592.  
 decomposition of, at a high temperature (SCHULTZ), 1877, ii., 341.  
 distillation of, by steam (NAUMANN), 1878, A., 283.  
 action of hydrochloric acid on (ARMSTRONG and TILDEN), 1879, T., 754; (TILDEN), 1879, A., 943.  
 action of iodine on (PREIS and RAÝMAN), 1879, A., 623; (ARMSTRONG), 1880, A., 125.  
 action of, on lead and tin (MERRICK), 1874, 1065, 1188.  
 action of nitrosyl chloride on (TILDEN), 1875, 514.  
 action of sulphuric acid on (ARMSTRONG and TILDEN), 1879, T., 734.  
 oxidation of (SCHREDER), 1873, 889; 1874, 794; (HEMPFEL), 1875, 632; 1876, i., 921.  
 atmospheric oxidation of (KINGZETT), 1874, 511; 1875, 210; 1877, i., 183; 1880, A., 51.  
 examination of oxidised (KINGZETT), 1875, 214.  
 antiseptic and disinfecting powers of oxidised (KINGZETT), 1877, i., 184.  
 chemical relation of phosphorus to, and action of, as an antidote in phosphorus poisoning (KÖHLER and SCHIMPF), 1873, 179.

- Oils, vegetable**, of turpentine, cymene from (WRIGHT), 1873, 691.  
 identity of the cymenes from camphor and (PATERNO), 1874, 687.  
 formation of naphthalene from (SCHULTZ), 1876, ii., 197.  
 tetraterbenthene, a solid polymeride of (RIBAN), 1875, 61.  
 French and Russian, hydration of terpenes from (FLAWITZKY), 1879, A., 726; 1880, A., 264, 402.  
 Russian (TILDEN), 1878, T., 80.  
 detection of, in volatile oils by means of alcohol (DRAGENDORFF), 1873, 1058.  
 of valerian (BRUYLANTS), 1878, A., 512, 799.  
 of vitriol. See Sulphuric acid under Sulphur.  
 of water-cress. See Oil of *Nasturtium officinale*.  
 of wine (HARTWIG), 1879, A., 615; 1881, A., 794.  
 of wintergreen, testing of (ANON.), 1877, ii., 227.  
 wood, from wood-tar (THERIUS), 1878, A., 664.  
   See also Gurjun balsam under Resins.  
 of wormseed (FAUST and HOMEYER), 1875, 371.  
 of wormwood (WRIGHT), 1874, 1, 317; (BEILSTEIN and KUPFFER), 1874, 153.  
   oxidation of, by air (KINGZETT), 1876, i., 243.  
 of *Yerba mansa* (LLOYD), 1880, A., 721.  
 of ylang-ylang, oxidation of, by air (KINGZETT), 1876, i., 243.  
   See also Oils, fatty.
- Oil-seeds**, advantages of only partially removing the fat in (WITTMACK), 1879, A., 99.  
 albuminoids from (RITTHAUSEN), 1880, A., 676; 1881, A., 833; 1882, A., 234.
- Oil-tree** of China (*Elaeococca Vernicia*; *Tong-Yoon*), constituents of the seed of (CLOEZ), 1876, i., 616; ii., 102.
- Oleandrine** (BETTELLI), 1876, i., 401.
- Olefines**, relative proportions of, in shale and petroleum products (ALLEN), 1882, A., 100.  
 a reaction of the homologues of, which may explain their absence from natural petroleum (LE BEL), 1876, i., 539.  
 synthesis of (ELTEKOFF), 1878, A., 482.
- Olefines**, and some of their derivatives, atomic volume and specific gravity of (HERMANN), 1878, A., 640.  
 transformation of, into the corresponding alcohols (BUTLEROFF), 1876, ii., 396.  
 action of hydrochloric acid on (LE BEL), 1878, A., 19.  
 action of oxidising agents on (O. and F. ZEIDLER), 1879, A., 907.  
 polymerisation of the (GORJAINOFF and BUTLEROFF), 1874, 138.  
 reactions of the halogen compounds of (ELTEKOFF), 1878, A., 563; 1879, A., 34.  
 action of the copper-zinc couple on the bromides of (GLADSTONE and TRIBE), 1874, 406.  
 and other unsaturated compounds, direct formation of the chlorobromides of (SIMPSON), 1880, A., 456.  
 nitr- (HAITINGER), 1881, A., 1114.  
   See also Hydrocarbons and Paraffins.
- Oleic acid**, identity of Walter's moringic acid with (ZALESKI), 1875, 355.  
 preparation of (ANON.), 1882, A., 123.  
 metallic salts of, solubility of, in glycerol (ASSELIN), 1873, 875.  
 estimation of, in palm oils and autoclaved materials (SEAR), 1882, A., 342.  
 estimation of, and separation of stearic acid from (DAVID), 1878, A., 1011.
- Oleic soap** (ANON.), 1882, A., 1016.
- Oleomargarine**. See Margarine.
- Oleo-resin** of the sun-flower (CHARDON), 1874, 176.
- Oleum foliorum Pini sylvestris* (TILDEN), 1878, T., 82.
- Oleum theobromae*. See Cocoa butter.
- Olibanum**, oil of (KURBATOFF), 1875, 90.
- Olibene** (KURBATOFF), 1875, 90.
- Oligoclase** (HEENSTREET), 1878, A., 209; (VOM RATH), 1881, A., 549.  
 from Dürrmosbach (v. HAUSIOFER), 1881, A., 386.  
 from the Urals (VOM RATH), 1873, 249.  
 from Wilmington, Delaware (TECLU), 1873, 149.  
   See also Felspar.
- Olive**. See under Agricultural Chemistry.
- Olive-cake**, composition of (ANON.), 1873, 403.
- Olive oil**. See under Oils, vegetable.
- Olivinite** (VOM RATH), 1881, A., 551.  
 occurrence of, in greenstone (COLLINS), 1877, ii., 283.
- Olivil**, action of hydriodic acid on (AMATO), 1878, A., 681.



- Olivine** (*chrysolite*) (HIORTDAHL; STÖGREN), 1881, A., 698.  
 volume-constitution of (SCHRÖDER), 1874, 875.  
 crystallised slag isomorphous with (ARNOLD), 1881, A., 1016.  
 and serpentine of Snarum (HELLAND), 1873, 607.  
 from Vesuvius (v. DINGESTEDT), 1874, 553.  
 in dolerite (v. SANDBERGER), 1874, 559.
- Olivine-gabbro** from Cornwall (HOUGHTON), 1881, A., 388.
- Olivine-rock** (MÖHL), 1878, A., 119.  
 of the Saxon granulitic district (DATHE), 1876, ii., 387, 612.
- "Olonez-earth"** (INOSTRANZEFF), 1881, A., 358.
- Omphalocarpin** (NAYLOR), 1882, A., 308.
- Omphalocarpum procerum*, fruit of (NAYLOR), 1882, A., 307.
- Onofrite** from Utah (BRUSH), 1881, A., 361; (COMSTOCK), 1881, A., 361; 1882, A., 148.
- Ontariolite** (SHEPARD), 1881, A., 382.
- Oolite**, formation of (KNOP), 1874, 673.
- Opal** (ROSTER), 1878, A., 282.  
 noble-, from Mexico (BURKART), 1875, 551.  
 spectrum of (BEHRENS), 1874, 557.  
 semi-, pseudomorph of, after calcite (GEINITZ), 1877, i., 694.
- Ophitic structure**, artificial production of (FOUQUÉ and MICHEL-LÉVY), 1881, A., 697.
- Opianic acid**, and its derivatives (PRINZ), 1882, A., 402; (WEGSCHEIDER), 1882, A., 1206.  
 action of heated caustic potash on (BECKETT and WRIGHT), 1876, i., 281.  
 isomerides of hemipinic and quercimeric acids and (TIEMANN and MENDELSON), 1877, ii., 487.  
 sodium salt of, action of heated soda line on (BECKETT and WRIGHT), 1876, i., 287.  
 chlor- and nitr-, and their salts (PRINZ), 1882, A., 402.
- Opianine**. See Narcotine under Alkaloids.
- Opium**, examination of some specimens of (FLÜCKIGER), 1876, i., 115.  
 Behar (WARDEN), 1878, A., 1000.  
 Persian (CARLES), 1874, 90.  
 assay (ARNOLDI), 1874, 1018; (PRES-COTT), 1880, A., 191; (MYLIUS), 1880, A., 829; (SQUIBB), 1882, A., 666.
- Opium**, estimation of morphine in (TESCHEMACHER), 1877, ii., 231; (MYLIUS), 1880, A., 829; 1881, A., 945.
- Opium alkaloids** (HESSE), 1874, 484.  
 action of ferric chloride and sulphuric acid on (LINDO), 1878, A., 678; (HOW), 1878, A., 811.
- Opium-extract**, insoluble matter from (PÉRIER), 1877, i., 720.
- Opium tincture**, valuation of (PRES-COTT), 1880, A., 193.
- Opoponax** (HIRSCHSOHN), 1878, A., 158.
- Orange**, composition of (ANON.), 1879, A., 1049.  
 and mandarin orange, composition of the ashes of trunk, leaves, and fruit of (RICCIARDI), 1880, A., 915.
- Orange flower water**, testing (HOFFMANN), 1878, A., 542.
- Orange peel oil**, proximate constituents of (WRIGHT), 1873, 552.
- "Orcacetein"** and **"orcacetophenone"** (*dihydroxytolyl methyl ketone*) (KASINSKI), 1882, A., 1288.
- Orcella weed**, Californian (HESSE), 1880, A., 255.
- Orcenedialdehydes**,  $\alpha$ - and  $\beta$ -, and  $\alpha$ -**orcenedialdehydedianilide** (TIEMANN and HELKENBERG), 1879, A., 720.
- Orchil**. See Archil.
- Orcin**. See Orcinol.
- Orcinaurin**, and its preparation (NENCKI), 1882, A., 1201.
- Orcinol** (*3:5-dihydroxytoluene; methyl-resorcinol*) (NEVILE and WINTHER), 1882, T., 415.  
 from 3-bromotoluene-5-sulphonic acid (NEVILE and WINTHER), 1882, T., 420.  
 constitution of (TIEMANN and STRENG), 1882, A., 51.  
 action of ammonia on (LIEBERMANN), 1874, 693; 1876, i., 704.  
 action of aqua regia on (REYMANN), 1880, A., 645.  
 action of, on chloracetic acid (SAARBACH), 1880, A., 393.  
 action of ethylic chloroformate on (BENDER), 1881, A., 48.  
 action of sulphuric acid on (WITTENBERG), 1882, A., 1290.  
 ethers of, action of nitric acid on (WESELSKY and BENEDIKT), 1881, A., 1139.  
 estimation of, in archil lichens (REYMANN), 1875, 1293.
- Orcinol**, triamido-, and amidodimido- (STEENHOUSE), 1873, 752.

**Orcinol**, *pentabrom-* (LIEBERMANN and DITTLER), 1874, 62; (CLAASSEN), 1878, A., 867.  
*mono-* and *tri-*iod- (STENHOUSE), 1873, 275; 1874, 585.  
*α-* and *β-*nitr- and *di*bromonitr- (WESELSKY), 1874, 694.  
*β-dinitr-* (LEEDS), 1881, A., 584.  
*2:4(?)-dinitr-* (STENHOUSE and GROVES), 1877, i., 548.  
*trinitr-* (MERZ and ZETTER), 1879, A., 717; 1880, A., 113.  
*dinitroso-* (STENHOUSE and GROVES), 1877, i., 545.  
**β-Orcinol**. See *Betorecinol*.  
**Orcinol colouring matters** (LIEBERMANN), 1875, 168; (SCHWARZ), 1880, A., 551.  
**Orcinoldiazotoluene**. See *o-Toluene-azo-orcinol* under *Azo*.  
**Orcinol-phthalein** and *-phthalin* (FISCHER), 1875, 159; 1877, i., 205.  
**Orcinyl mono-** and *di-*acetates (RASINSKI), 1882, A., 1289.  
**Orcylaldehyde** (3:5-*dihydroxytolualdehyde*) and its anilide (TIEMANN and HELKENBERG), 1879, A., 720.  
**"Ore-reducer"** slag, estimation of copper in (CLOUD), 1877, ii., 650.  
**Oreoselin** (*oreosclone*) (HLASIWETZ), 1874, 802.  
 from pencedanin (HLASIWETZ and WEIDEL), 1875, 256.  
**Organic acids**. See *Acids*.  
 analysis. See *Analysis*.  
 bases. See *Bases*.  
 compounds. See *Compounds*, carbon.  
 forms, elementary, artificial production of (MONNIER and VOGT), 1882, A., 356.  
**Organic matter**, absorption of nitrogen and hydrogen by (BERTHELOT), 1876, ii., 392, 616.  
 possibility of the disengagement of nitrogen gas during the decay of nitrogenous (HÜFNER), 1876, ii., 210.  
 putrescent, in potable waters (BISCHOF), 1877, ii., 812.  
 in sea-water (JAGO), 1881, T., 320.  
 relations between oxygen and, in various waters (WEYL and ZEITLER), 1881, A., 650, 1087; 1882, A., 556.  
 spontaneous oxidation of, in water (FRANKLAND), 1880, T., 517.  
 oxidation of, in water, by filtration through various media (HATTON), 1881, T., 258.

**Organic matter**, methods for indicating the presence of, in water (TIEMANN and PREUSSE), 1880, A., 290.  
 estimation of, in animal charcoal by permanganate solution (THORN), 1876, i., 757.  
 estimation of, in waters (HERCHER), 1877, ii., 647; (DITTMAR and ROBINSON), 1877, ii., 806; (TIDY), 1879, T., 46; (LECHARTIER), 1879, A., 976; (MALLER), 1882, A., 1324.  
**Organic products**, distinction between natural and artificial (PASTEUR), 1875, 1269.  
**Organic residues**, different, comparison of the combining energies of the halogens and of sodium with (WISLICENUS), 1882, A., 934.  
**Organism**, combustion in the (SCHÜTZENBERGER), 1874, 811.  
 physiological combustion in the (PFLÜGER), 1875, 1040.  
 dehydration in the (NENCKI), 1873, 287.  
 interchange of material in the (ADAM-KIEWICZ), 1880, A., 565.  
 influence of the eye upon tissue change in the (v. PLATEN), 1876, i., 722; (PFLÜGER), 1876, ii., 107.  
 decomposition processes in the (NENCKI), 1878, A., 525.  
 influence of the temperature of the air on the processes of decomposition in the (v. VOIT), 1879, A., 75; (v. VOIT and THEODOR), 1879, A., 951.  
 processes of decomposition which occur in the, on feeding with meat and carbohydrates, and with carbohydrates alone (v. PETTENKOPFER and v. VOIT), 1875, 652.  
 decomposition of albumin in the (FORSTER), 1876, ii., 211.  
 double decomposition of potassium bromide and sodium chloride in the (BILL), 1877, i., 731.  
 relation of fermentative processes in the (HOPPE-SEYLER), 1876, i., 951.  
 oxidations in the (TAKÁCS; BAUMANN and PREUSSE), 1879, A., 814.  
 oxidation of aromatic substances in the (PREUSSE), 1882, A., 756.  
 oxidation of aromatic hydrocarbons in the (NENCKI and GIACOSA), 1881, A., 632.  
 reduction-processes in the (v. MERING), 1882, A., 952.

**Organism**, synthetic processes in the (JAFFÉ), 1879, A., 176; (BAUMANN and PREUSSE), 1879, A., 814; 1882, A., 756.  
 means whereby acids are produced in the (MALY), 1878, A., 593.  
 occurrence of alcohol in the (RAJEWSKY), 1876, I., 405.  
 during life, alkaloidal substances found in the (SPICA), 1881, A., 294.  
 formation of allantoin from uric acid in the (SALKOWSKI), 1876, II., 291.  
 presence of copper in the (BERGERON and L'HÔTE), 1875, 477; (GIUNTI), 1880, A., 275; (BIZIO), 1880, A., 565.  
 formation of fat in the (WEISKE and WILDT), 1874, 994; 1875, 173; (PEREWOZNIKOFF), 1878, A., 238; (SOXHLET), 1882, A., 238; (SCHULZE), 1882, A., 878.  
 unorganised ferments of the (GRÜTZNER), 1876, II., 648; 1878, A., 441.  
 origin and accumulation of glycogen in the (WOLFFBERG), 1877, I., 484.  
 dissemination of glycogen in the (ABELES), 1877, II., 204.  
 formation of hippuric acid in the (HOFMEISTER), 1874, 385; (v. SCHRÖDER), 1881, A., 928.  
 formation of hippuric and benzoic acids in the, during fever (WEYL and v. ANREP), 1880, A., 716.  
 hydro-*p*-coumaric and *p*-hydroxyphenylacetic acids in the (BAUMANN), 1880, A., 648; 1882, A., 514.  
 occurrence and origin of paralactic acid in the (SALOMON), 1879, A., 176.  
 lecithin in the (DASTRE and MORAT), 1875, 280.  
 formation of phenol in the (SALKOWSKI), 1877, II., 504; (ENGEL), 1881, A., 114.  
 diffusion of salicylic acid in the (LIVON and BERNARD), 1878, A., 994.  
 conversion of salicylic acid into salicyluric acid in the (PICCARD and BECK), 1876, I., 950.  
 decomposition of sodium salicylate in the (BINZ), 1876, II., 319.  
 conjugated sulphuric acids in the (BAUMANN), 1876, I., 726; II., 212, 534.  
 changes which starch undergoes in the (BIMMERMANN), 1880, A., 677.

**Organism**, existence of a substance in the, exhibiting the absorption-spectrum of blood (v. STRUVE), 1876, II., 318.  
 formation of urea from the. See under Urea.  
 action of the alkaloids on the albuminates of the (ROSSEBACH), 1874, 173.  
 behaviour of ammonium chloride in the (SALKOWSKI), 1879, A., 830.  
 behaviour of some aromatic compounds in the (v. NENCKI), 1875, 96.  
 action of bromobenzene on the (BAUMANN and PREUSSE), 1879, A., 803.  
 acids produced by the introduction of chloro- and bromo-benzene into the (JAFFÉ), 1879, A., 796.  
 action of cacodylic acid on the (SCHULZ), 1879, A., 476.  
 action of carbonic anhydride on the (FRIEDLÄNDER and HERTER), 1879, A., 174.  
 behaviour of cymene in the (JACOBSEN), 1880, A., 38.  
 behaviour of guanidine, diacyandiamidine and cyanamide in the (GERGENS and BAUMANN), 1876, II., 110.  
 behaviour of phenetol in the (KOSSEL), 1881, A., 631.  
 behaviour of phenol in the (BAUMANN and HERTER), 1877, I., 486; (BAUMANN), 1879, A., 816.  
 behaviour of substances containing sulphur in the (SALKOWSKI), 1876, I., 949.  
 behaviour of terpenes in the (v. DEN VELDEN and BAUMANN), 1877, I., 487.  
 elimination of nitrogen from the (SEEGEN and NOWAK), 1880, A., 272; 1882, A., 636; (OPPENHEIM), 1880, A., 813; (GRUBER), 1881, A., 451; (v. PETTENKOFER and v. VOIT), 1882, A., 238, 747.  
 action of potassium chlorate on the (HEHNER), 1878, A., 683.  
 action of potassium iodate on the (MELSENS), 1873, 398.  
 importance of sodium chloride and potassium salts in the (BUNGE), 1873, 1042.  
 distribution of arsenic in the, after administration of arsenious anhydride (LUDWIG), 1882, A., 416.  
 modification effected by the, on various albuminoid substances when injected into the veins (BÉCHAMP and BALTUS), 1879, A., 334.

- Organs** of animals, healthy, existence of bacteria or their germs in (NENCKI and GIACOSA), 1879, A., 1046.  
 internal, of the body, detection of alkaloids in the (RÖRSCH and FASSBENDER), 1875, 192.  
*Organum creticum*, *O. hirtum*, and *O. vulgare*, oil of (JAHNS), 1880, A., 112.  
**Orleans yellow** on cotton (KIELMEYER), 1876, i., 819.  
**Ornithine** (JAFFÉ), 1878, A., 585.  
**Ornithuric acid** (*diamidovaleric acid*) (JAFFÉ), 1878, A., 585.  
**Orpiment**, occurrence of, in Utah (BLAKE), 1882, A., 148.  
 See also Arsenic sulphide.  
**"Orroprotein"** (DANILEWSKY and RADENHAUSEN), 1881, A., 449.  
**pseudOrsellic acid**, preparation of (SCHWARZ), 1881, A., 96.  
**"paraOrsellic acid"** and its salts (SENHOFER and BRUNNER), 1881, A., 266.  
**Orthite**, from Amelia Co., Virginia (DUNNINGTON), 1882, A., 1175.  
 gadolinite, and similar minerals, appearance of, under the microscope (STÖGREN), 1878, A., 387.  
 composition of (ENGSTRÖM), 1878, A., 115.  
**Orthoclase** (*potash felspar*) (ROSTER), 1878, A., 281; (VOM RATH), 1881, A., 549.  
 porphyry vein, with loose crystals of, in the Elbthalgebirge (WESTPHAL), 1874, 561.  
 from Frath (VOM RATH), 1881, A., 550.  
 vitreous, from the volcanic sands of the Island of Rachgouin, Algeria (VÉLAIN), 1874, 1145.  
 artificial formation of (HAUTEFEUILLE), 1878, A., 15, 205; (FRIEDEL and SARASIN), 1882, A., 478.  
 simultaneous reproduction of quartz and (HAUTEFEUILLE), 1880, A., 532.  
 artificial crystallisation of (MEUNIER), 1879, A., 359.  
 penetration twins of (LASPEYRES), 1878, A., 277.  
 decomposition of (STOKLASA), 1882, A., 650.  
 pseudomorphic crystals having the form of (PHILLIPS), 1875, 684.  
 and sundry triclinic felspars, microscopical examination of (DES CLOIZEAUX), 1876, ii., 611.  
 See also Felspar.
- Orthophosphoric acid**. See under Phosphorus.  
**Orthose**. See Orthoclase.  
**Ortho-series**, condensation in the (LADENBURG), 1877, i., 302; ii., 752.  
**Oscine** ( $\psi$ -*tropine*) and its salts (LADENBURG), 1881, A., 56.  
**Osiers**, cultivation of (KRAHE), 1882, A., 888.  
**Osmium** (SAINTE-CLAIRE DEVILLE and DEBRAY), 1876, ii., 279.  
 oxysulphides (v. MEYER), 1878, A., 14.  
**Osmylditetramine** and its salts (GIBBS), 1882, A., 144.  
*Osmorhiza longistylis*, composition of (GREEN), 1882, A., 988.  
**Osmose**. See under Diffusion.  
**"Osmose-water,"** manufacture of nitre from the salts of (D'HAVERINCOURT), 1882, A., 1012.  
 potassium chloride in (STEINREICH), 1882, A., 115.  
 manuring with (BRIEM), 1882, A., 993.  
**Ossein**, constitution of (SCHÜTZENBERGER and BOURGEOIS), 1876, ii., 104.  
**Osteolite** (BOŘICKÝ), 1874, 236.  
 as a manure (SIEGFRIED), 1882, A., 92.  
**Ostrich egg**, an ancient (BALLAND), 1882, A., 242.  
**Ostruthin** (v. GORUP-BESANEZ), 1874, 907; 1877, i., 717.  
**Otto of limes** (*Citrus Limetta*) (WRIGHT and PIESSE), 1877, ii., 548.  
**Ottrelite** (TSCHERNAK and SÍPÖCZ), 1881, A., 234.  
**Oven** for heating sealed tubes (SMITH), 1880, T., 490; (v. BABO), 1880, A., 846.  
**Oxal-o-amidophenyl mercaptan** (v. HOFMANN), 1880, A., 885.  
**Oxalamylne**. See Butylglyoxaline.  
**Oxalenyldiphenylenetetramine** (*anhydrosolanilide*) and oxalenylditolylene-tetramine (HÜBNER), 1882, A., 181.  
**Oxalethylne**. See Methylethylglyoxaline.  
**Oxalic acid** in beet leaves (MÜLLER), 1880, A., 733.  
 occurrence of, in Fungi (HAMLET and PLOWRIGHT), 1877, ii., 796.  
 discovery of, in tartaric liquors (WARINGTON), 1875, 989.  
 in the urine (FÜRBRINGER), 1878, A., 162.  
 waste material of the parchment manufacture as a source of (ČECH), 1877, ii., 380.



**Oxalic acid**, preparation of, from sawdust, bran and lignose (THORN), 1874, 297.  
 synthesis of (MERZ and WEITH), 1882, A., 1049.  
 purification of (HABEDANCK), 1873, 376; (ŠTOLBA), 1874, 1084.  
 crystallised (VILLIERS), 1880, A., 544.  
 electrolysis of aqueous solutions of (BUNGE), 1876, ii., 286; 1877, i., 455; (RENARD), 1880, A., 27.  
 dehydrated, action of, on primary, secondary, and tertiary alcohols (CAHOURS and DEMARÇAY), 1877, i., 183; 1878, A., 653.  
 action of, on polyhydric alcohols (LORIN), 1873, 1219; 1874, 140; 1875, 1171; 1876, ii., 58; 1878, A., 398.  
 reaction of, with *o*-amidophenol (LADENBURG), 1877, ii., 753.  
 action of, on codeine and on morphine (BECKETT and WRIGHT), 1875, 696.  
 action of, on diphenylamine (GIRARD and WILLM), 1876, ii., 99.  
 action of, on ethylic acetate (KAEMMERER), 1875, 1171.  
 and its sodium salt, action of electrolytic hydrogen on (BALBIANO and ALESSI), 1882, A., 1185.  
 action of, on the nitrates of calcium, potassium and sodium (EMMERLING), 1873, 79.  
 action of potassium permanganate on (MORAWSKI and STINGL), 1879, A., 205; (LEEDS), 1879, A., 353.  
 action of, on the permanganates (JONES), 1878, T., 98.  
 action of, on resorcinol at high temperatures (CLAUS and ANDREAE), 1877, ii., 889.  
 action of, on sodium silicate (MONIER), 1878, A., 198.  
 decomposition of, by the action of aqua regia (LONGI), 1882, A., 715.  
 influence of heat and the proportion of glycerol on the decomposition of (LORIN), 1882, A., 389.  
 decomposition of a solution of, by sunlight (DOWNES), 1881, A., 485.  
 oxidation of, by ammoniacal cupric oxide (CAZENEUVE), 1880, A., 235.  
 oxidation of, by nitric acid (ERLENMEYER, SIGEL and BELLI), 1874, 980; 1876, i., 893.  
 application of, to the industrial preparation of formic acid (LORIN), 1874, 140.

**Oxalic acid**, sulphuretted derivatives of (WEDDIGE), 1874, 566.  
 not poisonous (PFEIFFER), 1879, A., 335.  
 Neubauer's relation between the reducing action of tannin and (COUNCLER and V. SCHROEDER), 1882, A., 1238.  
 estimation of (JEAN and PELLET), 1877, ii., 358.  
 contaminated with sulphuric acid, estimation of (BINDER), 1877, ii., 641.  
 alkali salts of, in solution, action of hydrochloric acid on (THOMAS), 1878, T., 374.  
 ammonium salt of, composition of crystallised, from Guanapi guano (TANNER), 1876, i., 775.  
 ammonium iron salts of (EDER and VALENTA), 1881, A., 714.  
 barium salt of, action of sodium carbonate on (SMITH), 1877, ii., 249.  
 removal of gypsum from water by means of (ANTHON), 1876, ii., 217.  
 barium chromium, and barium chromium potassium salts of (CLARKE and KERLER), 1881, A., 576, 1031.  
 bismuth salts of (MUIR), 1878, T., 70, 194.  
 calcium salt of, in plants (VAN DER PLOEG), 1880, A., 914.  
 artificial production of crystals of (VESQUE), 1874, 358.  
 action of sodium carbonate on (SMITH), 1877, ii., 246.  
 detection of, in the ammonium sulphide group (HILGER), 1875, 102.  
 conversion of, into calcium carbonate in analysis (IRBY), 1874, 390.  
 calcium potassium chromium salt of, and its optical properties (HARTLEY), 1874, 250.  
 chromium salt of, preparation and properties of (MOISSAN), 1881, A., 685.  
 erbium salt of (CLEVE and HÖGLUND), 1873, 139; (CLEVE), 1881, A., 350.  
 iron salts of, and some of their double salts (EDER and VALENTA), 1881, A., 713.  
 photochemical reaction of (JODIN), 1882, A., 911.  
 lead salt of, action of, on sodium carbonate (SMITH), 1877, ii., 250.

**Oxalic acid**, potassium salt of, in aqueous solution, influence of temperature on the decomposition of barium chloride by (MUIR), 1880, T., 78.  
 potassium iron salts of (EDER and VALENTA), 1881, A., 714.  
 potassium ferrous salt of, reducing properties of (EDER), 1880, A., 544.  
 as a developer (EDER), 1880, A., 590.  
 rubidium salt of, and its preparation from rubidium alum, and use of, in the formation of other rubidium compounds (STOLBA), 1878, A., 854.  
 silver salt of, action of iodine on (BIRNBAUM and GAIER), 1880, A., 801.  
 action of, on the bromides of ethylene and propylene (KARENIKOFF), 1877, ii., 422.  
 sodium salt of, action of, on barium, calcium, lead and strontium carbonates (SMITH), 1877, ii., 245.  
 sodium and potassium salts of, conversion of, into carbonates (MERZ and WEITH), 1882, A., 1050.  
 sodium ferric salt of (EDER and VALENTA), 1881, A., 714.  
 as a developer (EDER), 1881, A., 671.  
 strontium salt of, action of sodium carbonate on (SMITH), 1877, ii., 249.  
 strontium chromium salt of (CLARKE and KEBLER), 1881, A., 1031.  
 yttrium salt of (CLEVE and HÖGLUND), 1873, 138.  
 metallic salts of, use of, in analysis (v. REIS), 1881, A., 843.  
**Oxalic acid series**, bases of (WALLACH and SCHULZE), 1880, A., 547; 1881, A., 572.  
 thiamides of (WALLACH and PIRATH), 1879, A., 784.  
**Oxalimidoethyl ether** and its hydrochloride (PINNER and KLEIN), 1879, A., 47.  
**"Oxalin"** (LORIN), 1873, 1122.  
**Oxaline**. See Glyoxaline.  
*Oxalis Acetosella*, vegetation of, in a soil free from potash (MERCADANTE), 1876, i., 96.  
**Oxalmethylene**. See Methylglyoxaline.  
**Oxalodicarbamide** (GRIMAUX), 1880, A., 105.  
**Oxalodiphenylhydrazide** (FISCHER), 1878, A., 309.  
**Oxalpropylene**. See Ethylglyoxaline.  
**Oxaluramide**, synthesis of (CARSTANJEN), 1874, 568.

**Oxaluric acid**, connection between allophanic and alloxanic acids and (SALOMON), 1874, 791.  
 homologues of (PIKE), 1874, 49.  
 potassium salt of, and the determination of the alkali metals in the salts of ureides (MENSCHUTKIN), 1874, 890.  
**Oxalylcarbamide**. See Parabanic acid.  
**Oxalyldi-*o*-tolylguanidine** (BERGER), 1880, A., 244.  
**Oxalyldi-*p*-tolylguanidine** (LANDGREBE), 1878, A., 216.  
**Oxalylethylanthranilic acid** (v. BAEYER), 1882, A., 1101.  
**Oxalylpiperidine** (SCHOTTEN), 1882, A., 983.  
**Oxamethane**. See Ethylic oxamate.  
**Oxamic acid**, production of, by the oxidation of glycocine (ENGEL), 1875, 251, 357.  
 thio-, and its salts and amides (WEDDIGE), 1874, 566.  
**Oxamide**, action of alkaline hypobromite on (FOSTER), 1878, T., 470; 1879, T., 119.  
 products obtained by distilling, with sodium ethoxide or potassium phenoxide (WEITH), 1873, 1240.  
**Oxamides**, substituted (WALLACH), 1881, A., 717.  
**Oxanilide** (*diphenyloxamide*), action of phosphorus pentachloride on (WALLACH), 1881, A., 718.  
*o*- and *p*-dinitr- (HÜENER), 1882, A., 180.  
 **$\beta$ -Oxanthraflavone**. See Flavopurpurin.  
**Oxanthranol** (*anthraquinol*), and its preparation and derivatives (LIEBERMANN and LANDSHOFF), 1882, A., 860.  
 nitroso- (LIEBERMANN and LANDSHOFF), 1881, A., 607.  
**Oxanthraxanthin**. See Flavopurpurin.  
**Oxatolylic acid**. See Dibenzylglycollic acid.  
**Oxen**, new kind of calculus from (ROSTER), 1873, 398.  
 See also under Agricultural Chemistry.  
**Oxethenaniline**. See Hydroxyethyl-aniline.  
**Oxethenetoluidine**. See Hydroxyethyl-*p*-toluidine.  
**Oxethyl-**. See Ethoxy-.  
**Oxidation**, amounts of, produced in given times at various temperatures (WRIGHT and MENKE), 1880, T., 790.  
 acceleration of, caused by the less refrangible end of the spectrum (ABNEY), 1880, A., 429.

- Oxidation**, effect of light on (CHASTAING), 1877, ii., 818.  
 shown by change of colour in compounds in contact with air (V. HOFMANN), 1874, 764.  
 power of organic bases to prevent (BINZ), 1875, 649.  
 rapid, new application of, by which sulphides are utilized for fuel (HOLLWAY), 1879, A., 755.  
 apparatus for (LOEW), 1877, ii., 275.
- Oxides**, crystalline metallic, formation of, by means of potassium cyanide (VARENNE), 1879, A., 1016.  
 preparation of finely divided metallic (ANON.), 1879, A., 184.  
 temperature of formation of (MITSCHERLICH), 1877, i., 42.  
 composition of spent, from gas-purifying (DAVIS), 1874, 609.  
 specific volumes of (BRAUNER and WATTS), 1881, A., 219.  
 crystallisation of metallic, from glass (EBELL), 1876, ii., 336; 1878, A., 97.  
 polymorphism of (HERMANN), 1878, A., 702.  
 union of, by pressure (SPRING), 1881, A., 500; 1882, A., 273.  
 absorption of carbon mon- and di-oxides by metallic (WRIGHT and LUFF), 1878, T., 540.  
 action of halogens on metallic, at high temperatures (CROSS and SUGIRA), 1878, T., 405.  
 action of hydrogen dioxide on metallic (FAIRLEY), 1877, i., 6.  
 action of ozone on metallic (MAILFERT), 1882, A., 1161.  
 action of metallic, on salts (MILLS and WILSON), 1878, T., 360; (MILLS and PRATT), 1879, T., 336; (MILLS and MEANWELL), 1881, T., 533; (MILLS and DONALD), 1882, T., 18.  
 hydration of (CROSS), 1882, A., 12.  
 rehydration of metallic (CROSS), 1879, T., 796.  
 reduction of metallic, by hydrogen (MÜLLER-ERZBACH), 1875, 381; 1880, A., 298.  
 estimation of, in manufactured iron (BETTEL), 1881, A., 648.
- Oxidising and reducing agents**, heat of substitution in (THOMSEN), 1873, 1186; 1874, 530; 1875, 223.
- Oximido-**. See corresponding oxime.
- Oximido-ether**. See Oxalimidoethyl ether, and its hydrochloride.
- Oximidoacetoacetic ether**. See Ethylic nitrosoacetoacetate.
- Oximidocyanic acid**. See Parabanic acid.
- Oxindole** (SUIDA), 1878, A., 586; 1879, A., 937.  
 synthesis of (V. BAEYER), 1878, A., 587.  
*p*-amido- (GABRIEL and MEYER), 1881, A., 731.  
 chlor-, chloride. See Indole, *dichlor-nitr-* (V. BAEYER), 1879, A., 938.
- Oxoctenol**, and its acetate (BUTLEROFF), 1882, A., 936.
- Oxonic acid**, preparation of glyoxalyl-carbanide from, and potassium salt of (MEDICUS), 1875, 555.
- Ox-tongues**, tinned, composition of (WIGNER), 1881, A., 212.
- Oxyacanthine** (PARSONS), 1882, A., 1140.
- Oxyacetic acid**. See Glycollic acid.
- m*-**Oxyacrylic acid**. See Glycidic acid.
- Oxyamidodiisatindiamide** (*oxydimidodiamidoisatin*) (V. SOMMARUGA), 1878, A., 507, 799; 1879, A., 63.
- Oxyamidohydroisatin** (V. SOMMARUGA), 1879, A., 63.
- Oxyammonia**. See Hydroxylamine.
- $\alpha$ -Oxyanthraflavone**. See Anthrapurpurin.
- Oxyanthrarufin** (*oxychryszin*; 1:2:4' (?) *-trihydroxyanthraquinone*) (LIEBERMANN and GIESEL), 1876, ii., 90; (LIEBERMANN), 1877, i., 612; (LIEBERMANN and BOECK), 1879, A., 259; (LIEBERMANN and DEHNST), 1879, A., 942.
- Oxyazobenzene**. See Benzeneazophenol.
- Oxybenzeneazophthalenesulphonic acid**, nitr- (STEBBINS), 1880, A., 881.
- Oxybenzoic acid**, ether-sulphuric acids of. See Carboxyphenylsulphuric acids.
- Oxybenzoyltropeines**, *m*- and *p*-, and their salts (LADENBURG), 1880, A., 714.
- $\alpha$ -Oxybutyro-cyamidine and -cyamine** (DUVILLIER), 1880, A., 897.
- Oxycamphic acid** (DE MONTGOLFIER), 1878, A., 897.
- Oxycamphor** (SCHIFF), 1880, A., 892.
- Oxyisocamphor** (SCHRÖTTER), 1882, A., 66.
- Oxycamphoric anhydride** (SCHRÖTTER), 1882, A., 66.
- Oxycarbostyrl** (FRIEDLÄNDER and OSTERMAIER), 1882, A., 201, 732.
- Oxycarboxyphenylpropionic anhydride** (*benzhydrylpropionic carbonic anhydride*) (GABRIEL and MICHAEL), 1879, A., 246.

**Oxychrysazin** (*oxyanthraquin*; 1:2:4'(?)-*trihydroxyanthraquinone*) (LIEBERMANN and GIESEL), 1876, ii., 90; (LIEBERMANN), 1877, i., 612; (LIEBERMANN and BOECK), 1879, A., 259; (LIEBERMANN and DEHNST), 1879, A., 942.

**Oxyapocinchene** (KOENIGS), 1882, A., 224.

**Oxycinchomeric acid** (WEIDEL), 1875, 89.

**Oxycitraconic acid**, conversion of, into dihydroxy-pyrotartaric acid (MORAWSKI), 1875, 1253.

compounds of, with hydriodic and hydrochloric acids (MORAWSKI), 1875, 1253.

hydrochlor- (MORAWSKI), 1875, 1253.

**Oxycobaltiac salts**. See Cobalt-ammonium compounds under Cobalt.

**Oxyconiine**. See Conhydrine under Alkaloids.

**Oxycoumarin** ( $\beta$ -*umbelliferone*) (TIEMANN and LEWY), 1878, A., 424.

**Oxycyanconiine** (V. MEYER), 1881, A., 54.

**Oxycyclopia-red** and **oxycyclopia** (GREENISH), 1881, A., 443.

"**Oxycymene**." See Carvacrol.

**2'-Oxydihydroquinoline**. See Dihydro-carbostyryl.

**Oxydimorphine**. See Oxymorphine under Alkaloids.

**Oxydinaphthyl** (SMITH), 1877, ii., 558.

**Oxydinaphthylenes**,  $\alpha$ - and  $\beta$ -. See  $\alpha$ - and  $\beta$ -Dinaphthylene oxides.

**Oxydiphenylene ketone** (*isocarbonyldiphenylene oxide*) (RICHTER), 1882, A., 618.

**Oxydiphenylphthalein**. See Hydroxydiphenylphthalide.

**Oxyechitamine** (HESSE), 1881, A., 448.

**Oxygen** in the air (MENDELÉEFF), 1876, ii., 181; (V. JOLLY), 1880, A., 85, 698; (MORLEY), 1880, A., 90, 698; 1882, A., 278, 1025.

presence of, in metallic silver (DUMAS), 1878, A., 377.

in the sun (DRAPER), 1878, A., 101.

amount of, dissolved in rain and river water (GÉRARDIN), 1873, 740.

elimination of, from green twigs (BÖHM), 1878, A., 162.

evolution of, by plants in sunlight (HOPPE-SEYLER), 1879, A., 819.

evolution of, from plants under boiled water (BÖHM), 1876, ii., 321.

exhalation of, by plants, in the absence of carbon dioxide (MAYER), 1876, i., 95.

preparation of (LOEWE), 1874, 1056.

**Oxygen**, explosion in preparing (LIMOUSIN), 1881, A., 1097.

spectrum of (VOGEL), 1879, A., 497; (PAALZOW), 1879, A., 861; (SCHUSTER), 1880, A., 430.

presence of dark lines in the solar spectrum, which correspond closely with the lines of the spectrum of (DRAPER), 1879, A., 997.

refractive equivalent of, in organic compounds (LANDOLT), 1873, 460; (GLADSTONE), 1881, A., 958; 1882, A., 133.

atomic refraction of (BRÜHL), 1880, A., 782.

action of electricity on (BRODIE), 1873, 348.

heat of combustion of carbon monoxide and (BERTHELOT), 1878, A., 5; 1879, A., 591; (MALLARD and LE CHATELIER), 1882, A., 453.

heat of combustion of hydrogen and (SCHULLER and WARTHA; BERTHELOT), 1878, A., 5; (MALLARD and LE CHATELIER), 1882, A., 453.

heat of combustion of the explosive mixture of hydrogen and, in closed vessels (V. THAN), 1877, ii., 690.

combination of hydrogen and, by electric discharge (DEHÉRAIN and MAQUENNE), 1882, A., 360.

specific volume of (RAMSAY), 1879, T., 470; (THORPE), 1880, T., 143, 391.

atomic heat of (NILSON and PETTERSON), 1880, A., 850.

compressibility of (AMAGAT), 1881, A., 782.

liquefaction of (PICTET), 1878, A., 10. liquid, density of, in presence of inert liquids (CAILLETET and HAUTEFEUILLE), 1881, A., 874.

affinity of, for the non-metallic elements (THOMSEN), 1873, 1188, 1190.

relative affinities and reciprocal displacements of the halogens and, in metallic elements (BERTHELOT), 1878, A., 634; 1879, A., 351.

affinity of, for bromine (BAUMHAUER), 1873, 1096; (THOMSEN), 1873, 1188.

affinity of, for bromine, chlorine, and iodine (THOMSEN), 1873, 1188.

relative affinity of, for carbonic oxide and hydrogen (V. MEYER), 1876, ii., 40; (HORSTMANN), 1878, A., 8; 1879, A., 436.

affinity of, for hydrogen (THOMSEN), 1873, 126, 838.

affinity of, for sulphur, selenium and tellurium (THOMSEN), 1873, 1190.



**Oxygen**, affinity of metals for sulphur and (SCHUMANN), 1877, ii., 704.  
 sulphur, and the halogens, reciprocal displacements between, when combined with hydrogen (BERTHELOT), 1879, A., 296.  
 affinity value of metals for, as shown by the heat developed and the contraction produced during combination (MÜLLER-ERZBACH), 1874, 220; 1876, i., 669; 1882, A., 451.  
 combustion of organic substances in (LOISEAU), 1876, ii., 659.  
 media free from (GUNNING), 1878, A., 267.  
 influence of the position of the, on the boiling points of metameric compounds (NAUMANN), 1874, 529, 563.  
 dissolved, rate of disappearance of (FRANKLAND), 1880, T., 525.  
 occluded, presence of, in steel, especially in Bessemer steel (KERN), 1877, ii., 815; 1878, A., 649.  
 absorption of, by metallic copper (HEMPEL), 1882, A., 551.  
 absorption of, by alkaline solutions of pyrogallol and phloroglucinol (WEYL and ZEITLER), 1881, A., 307; (WEYL and GOTH), 1882, A., 401.  
 absorption of, and expiration of carbonic anhydride by plants (MOISSAN), 1880, A., 416.  
 absorption of, and emission of carbonic acid, by leaves kept in darkness (DEHÉRAIN and MOISSAN), 1874, 909.  
 absorption of, by yeast (SCHÜTZENBERGER), 1874, 1005.  
 action of bacteria on (HATTON), 1881, T., 250.  
 action of, on the acid chlorides and analogous compounds of phosphorus and arsenic (BERTHELOT), 1878, A., 696.  
 action of, on coal and paraffin (JAZUKOWITSCH), 1876, i., 894.  
 action of ethylic alcohol on electrolytic (RENARD), 1875, 440.  
 action of electrolytic, on glycerol (RENARD), 1875, 1249; 1876, ii., 64.  
 action of electrolytic, on glycol (RENARD), 1877, ii., 300.  
 action of, on the haloid compounds of tin, silicon, and boron (BERTHELOT), 1878, A., 636.  
 behaviour of, to haloid salts in presence of acid anhydrides (SCHULZE), 1880, A., 436.

**Oxygen**, action of, on mercury in eudiometric experiments (AMAGAT), 1881, A., 782.  
 and hydrochloric acid, mutual action of, on certain metallic bodies in producing a continuous stream of chlorine (Deacon's process) (LAMY), 1873, 1103.  
 action of electrolytic, on methylic alcohol (RENARD), 1875, 552.  
 dissolved in water, action of, on reducing agents (SCHÜTZENBERGER and RISLER), 1873, 840.  
 influence of, on fermentation (MORITZ), 1874, 599; (MAYER), 1874, 913; 1880, A., 908; 1881, A., 479; (BÉCHAMP), 1879, A., 735.  
 active (BÖTTGER), 1874, 222; (BAUMANN), 1882, A., 691; (TRAUBE), 1882, A., 795.  
 active condition of, induced by nascent hydrogen (HOPPE-SEYLER), 1880, A., 3.  
 theory that it becomes active during slow oxidation (FUDAKOWSKI), 1873, 594; (SCHÄR), 1873, 839.  
 active. See also Ozone.  
 supposed oxidation of silver, platinum and gold by, in presence of water (SKEY), 1876, ii., 608.  
 tin and platinum, compound of, analogous to the purple of Cassius (DELACHANAL and MERMET), 1876, i., 48.  
 germination of seeds in pure (BÖHM), 1874, 704.  
 relations between organic matter and, in various waters (WEYL and ZEITLER), 1881, A., 650, 1087; 1882, A., 556.  
 physiological action of (BERT), 1873, 643, 762, 1249; (NENCKI and SIEBER), 1882, A., 1307.  
 action of, on the organism (BERT), 1878, A., 594.  
 absorption of, in the lungs under ordinary and increased atmospheric pressure (BERT), 1873, 643, 762, 1249; (V. LIEBIG), 1875, 1273.  
 quantity of, which can be absorbed by the blood under various atmospheric pressures (BERT), 1875, 656.  
 tension of, in arterial blood (HERTER), 1879, A., 811.  
 richness in, of blood of animals living in elevated regions (BERT), 1882, A., 1120.  
 relation of, to the tissues and to the splitting up of albumin (FRAENKEL), 1876, i., 948.

- Oxygen**, compressed, use of, in physiological investigations (BERT), 1878, A., 236.
- Limousin's apparatus for the evolution of, for medical purposes (ANON.), 1874, 400.
- influences of food on the assimilation of, and excretion of carbon dioxide (SPECK), 1876, i., 723.
- Oxygen, detection and estimation:**—  
new method for detecting the evolution of, by vegetable or animal organisms (ENGELMANN), 1882, A., 335.
- estimation of free (SCHÜTZENBERGER and GÉRARDIN), 1873, 88; (SCHÜTZENBERGER and RISLER), 1873, 936; (MOHR), 1874, 186.
- apparatus for estimating, in the atmosphere (FISCHER), 1880, A., 137.
- estimation of active, in barium or hydrogen peroxide (BERTRAND), 1880, A., 744.
- estimation of, in blood (HÜFNER), 1879, A., 835.
- estimation of, in decarbonised Bessemer-iron, before addition of spiegel-eisen (BENDER), 1873, 298.
- estimation of, in urine (FREIRE), 1876, i., 115.
- estimation of, in vitriol chamber gases (v. LIEBIG), 1873, 935; (BODE), 1873, 1159.
- estimation of, dissolved in water (KÖNIG and MUTSCHLER), 1878, A., 164; (HUTCHINSON), 1879, A., 77; (TIEMANN and PREUSSE), 1880, A., 137; (KÖNIG and KRAUCH), 1880, A., 421.
- dissolved in water, use of sodium hyposulphite in the estimation of (BERNTSEN), 1881, A., 310.
- Oxygen compounds**, table of, showing the total amount of oxygen they contain, and the oxygen available for combustion (SPRENGEL), 1873, 798.
- Oxygen-molecule**, thermochemistry of the (FAIRLEY), 1877, i., 1.
- Oxyhæmatin** (JÄDERHOLM), 1878, A., 237.
- Oxyhæmoglobin**. See under Hæmoglobin.
- Oxyhepta<sup>i</sup>sobutylideneamine**, action of heat on (LIPP), 1881, A., 84; 1882, A., 164.
- Oxyheptic acid** (*heptolic acid*) (DEMARÇAY), 1878, A., 661; 1881, A., 255. homologues of (DEMARÇAY), 1879, A., 458.
- Oxyhexic acid** (*hexolic acid*) (DEMARÇAY), 1879, A., 459; 1881, A., 255.
- isoOxyhexic acid** (*isohecolic acid*) (DEMARÇAY), 1879, A., 459; 1881, A., 255.
- Oxyhomofluorescein**, *hexamido*-, and its hydrochloride and *hexanitro*-, and its nitrate (SCHWARZ), 1880, A., 552.
- Oxyhydrogen flame**, production of spectra by (MARVIN), 1876, ii., 156.
- Oxydiimidodiamidoisatin**. See Oxydiimidodiisatindianide.
- Oxy-ketones**, synthesis of (DOEBNER), 1878, A., 424; (DOEBNER and STACKMANN), 1879, A., 319; (DOEBNER and WOLFF), 1879, A., 638.
- Oxylepidens** and their chloro-derivatives (ZININ), 1873, 489.
- Oxylethylene**. See Methylene glycol.
- Oxyleucotin** (*methylprotocotoin*), and *mono*- and *di*-brom- (v. JOEST and HESSE), 1880, A., 327.
- Oxylupinine** (BAUMERT), 1882, A., 873.
- "Oxymaleic acid,"** preparation and properties of (BOURGOIN), 1873, 377, 1021.
- Oxymalonic acid**. See Tartronic acid.
- Oxymalonylcarbamide**. See Dialuric acid.
- Oxymethylbenzoic acid**. See  $\omega$ -Hydroxy-*o*-toluic acid.
- Oxymethylene**. See Formaldehyde.
- o*-Oxymethylhydroxyacetic acid**. See *m*-Hydroxymethyl-*p*-hydroxybenzoic acid.
- Oxymorphine** (*oxydimorphine*) and its salts (POLSTORFF; BROCKMANN and POLSTORFF), 1880, A., 408. hydrate (CHASTANG), 1882, A., 73.
- Oxynarcotine**, isolation of, and the action of oxidising agents on (BECKETT and WRIGHT), 1876, i., 461.
- Oxyænanthylic acid**. See  $\alpha$ -Hydroxyheptoic acid.
- Oxypentic acid** (*pentolic acid*) and its salts (DEMARÇAY), 1879, A., 458; 1881, A., 255.
- Oxyphenanthrene**. See Phenanthrol.
- Oxyphenylacetic acid**. See Phenoxyacetic acid.
- Oxyphenylthiocarbimide** (BENDIX), 1879, A., 314.
- Oxyphenylurethane**. See Ethylic *p*-hydroxyphenylcarbamate.
- Oxypropionic acid**. See Glycidic acid.
- Oxypurpurin**. See Tetrahydroxyanthraquinone.
- Oxypyromecazonic acid** and its salts (OST), 1879, A., 708.
- 2'-Oxyquinoline**. See Carbostyryl.
- "Oxyquinone"** (SCHREDER), 1881, A., 282.

- Oxysacchulmic acid** (SESTINI), 1882, A., 1182.
- Oxysacchulmide**, *sesquibrom-* and *di-* and *tri-chlor-* (SESTINI), 1882, A., 1182.
- Oxysorbic acid** (WEIDEL), 1880, A., 268.
- Oxysulphobenzide**. See Dihydroxydiphenylsulphone.
- Oxy-tetric and -tetrolic acid**. See Mesaconic acid.
- Oxytoluoyltropeine**. See Homatropine under Alkaloids.
- isoOxyvalero-cyamidine and -cyamine** (DUVILLIER), 1880, A., 897.
- Oysters**, sewage in (CAMERON), 1881, A., 953.
- Ozobenzene** (HOUEAU and RENARD), 1873, 610; (LEEDS), 1881, A., 898.
- Ozokerite** (HELM), 1879, A., 896.  
Galician (GRABOWSKI), 1877, ii., 284.  
composition of a nodule of, found at Kinghornness (MACADAM), 1879, A., 1020.  
See also Paraffin.
- Ozone** (GIANNETTI and VOLTA), 1875, 607; (V. LÖSECKE), 1876, i., 339; (JEREMIN), 1879, A., 8; (BERTHELOT), 1879, A., 435; (HAUTEFEUILLE and CHAPPUIS), 1880, A., 847.  
is it a normal constituent of the higher atmosphere? (HARTLEY), 1881, T., 122.  
atmospheric (MARIÉ-DAVY), 1876, ii., 171; (LEVY), 1877, ii., 916; 1878, A., 703; (SCHÖNE), 1881, A., 20, 345.  
formation of (LE BLANC), 1873, 242; (BOILLOT), 1873, 724; (BERTHELOT), 1878, A., 372; (HAUTEFEUILLE and CHAPPUIS), 1880, A., 847.  
production of, by the electric discharge (GIANNETTI and VOLTA), 1876, ii., 378.  
influence of different kinds of electric discharge on the amount of, formed (GIANNETTI and VOLTA), 1875, 607.  
formation of, by hydrocarbons (SCHIEL), 1879, A., 592.  
formation of, in the combustion of hydrogen in oxygen (BÖTTGER), 1874, 653.  
formation of, by the action of moist phosphorus on air (LEEDS), 1879, A., 881; 1880, A., 699, 847; 1881, A., 506; (MCLEOD), 1880, T., 118; (KINGZETT), 1880, T., 795; A., 3.
- Ozone** from potassium permanganate and oxalic acid (LEEDS), 1879, A., 353.  
preparation of, by heating substances containing oxygen (LEEDS), 1881, A., 221.  
formation of, by the pulverisation of water (BELLUCCI), 1877, i., 43.  
supposed disengagement of, from plants (BELLUCCI), 1874, 596.  
formation of, by the contact of plants with peroxide of hydrogen (COHNÉ), 1876, ii., 539.  
as a concomitant of the oxidation of the essential oils (KINGZETT), 1874, 511.  
influence of volume and temperature in the preparation of (LEEDS), 1880, A., 90.  
Loew's apparatus for the industrial preparation of (OTT), 1875, 108.  
energy due to the formation of (FAIRLEY), 1877, i., 10.  
non-production of, in the crystallisation of iodic acid (LEEDS), 1880, A., 213.  
spectrum of (HARTLEY), 1881, T., 57, 111; (CHAPPUIS), 1881, A., 213; 1882, A., 1017; (HAUTEFEUILLE and CHAPPUIS), 1881, A., 221.  
specific magnetism of (BECQUEREL), 1881, A., 340.  
thermochemistry of (MULDER and VAN DER MEULEN), 1882, A., 915.  
liquefaction of, and its colour (HAUTEFEUILLE and CHAPPUIS), 1881, A., 18, 786; 1882, A., 923.  
stability of (BERTHELOT), 1878, A., 371.  
solubility of, in water (CARIUS), 1873, 472; (LEEDS), 1880, A., 213.  
behaviour of, towards water (RAMMELSBERG), 1873, 1103.  
relation between water and (SCHÖNE), 1874, 222.  
behaviour of, with water and nitrogen (CARIUS), 1875, 40.  
some reactions of (KINGZETT), 1880, T., 792; A., 3.  
action of, on blood (DOGIEL), 1876, ii., 105.  
action of, on animal substances (BOILLOT), 1876, i., 724.  
action of, on alcohol (BOILLOT), 1873, 865.  
action of, on the alcohols (RENARD), 1880, A., 27.  
action of, on carbonic oxide (REMSEN and SOUTHWORTH), 1876, i., 341.

**Ozone**, action of, on the colouring matters of plants (LEEDS), 1880, A., 58.  
 action of, on germs contained in the air (CHAPPUIS), 1881, A., 632.  
 action of, on iodine (OGIER), 1878, A., 469.  
 action of, on manganous salts (MAQUENNE), 1882, A., 1032.  
 action of, on some noble metals (VOLTA), 1880, A., 205.  
 action of, on metallic salts and oxides (MAILFERT), 1882, A., 1161.  
 action of, on turpentine, etc. (KINGZETT), 1880, T., 800.  
 oxidation by (MAILFERT), 1882, A., 797.  
 oxidation of alcohol and ether by (WRIGHT), 1874, 975.  
 retrogradation produced by the electric discharge during the conversion of oxygen into (HAUTEFEUILLE and CHAPPUIS), 1882, A., 688.  
 transformation of, into oxygen by heat (REMSEN), 1882, A., 690.  
 does it combine with free nitrogen in presence of alkalis to form nitrites and nitrates? (BERTHELOT), 1877, i., 438.  
 decolourising power of (BOILLOT), 1875, 732.  
 decolourising power of concentrated (HOUEAU), 1873, 37.  
 bleaching sugar syrups by (LEEDS), 1880, A., 74.  
 application of concentrated in organic chemistry (HOUEAU and RENARD), 1873, 610.  
 effects produced by frost and, on cotton fabrics (GOPPELSROEDER), 1876, ii., 231.  
 detection of (BOEKE), 1873, 938.  
 estimation of (GIANNETTI and VOLTA), 1875, 607.  
 estimation of atmospheric (LEVY), 1877, ii., 916; 1878, A., 703; (HARTLEY), 1881, T., 119.  
 See also Oxygen, active.  
**"Ozone-developer"** (VULPIUS), 1878, A., 813.  
**Ozonoscopic papers**, action of carbonic anhydride on (PAPASOGLI), 1881, A., 975.

## P.

**Pachnolite**, from Greenland (WÖHLER), 1876, i., 884.  
 composition of (BRANDL), 1882, A., 1176.  
 and cryolite (KNOP), 1877, ii., 281.

**Pachnolite** and thomsenolite (KÖNIG), 1877, ii., 119.  
**Pachymose** (CHAMPION), 1873, 283.  
*Paeonia Moutan* (MARTIN and JAGI), 1879, A., 306.  
*Paeonia peregrina*, composition of (DRAGENDORFF and STAHR), 1879, A., 1043.  
**Pagodite**. See Agalmatolite.  
**Painting** on glass, new method of (MILLER), 1882, A., 127.  
**Paints**, preparation of (ANON.), 1882, A., 444.  
 permanent, for fire-proofing wood (SIEBURGER), 1873, 307.  
 reddish-brown, for wood (ANON.), 1874, 100.  
 white, for metallic surfaces (SELS), 1873, 205.  
**Palæopieirite** and its products of decomposition (OEBBEKE), 1878, A., 477.  
**Palladium**, preparation of (WILM), 1880, A., 854.  
 some new properties of (COQUILLION), 1877, i., 166.  
 electromotive force of, in the gas battery (VILLARI), 1875, 123.  
 electrochemical deposition of (BERTRAND), 1877, i., 161.  
 changes in the surface of, produced by oxygen-polarisation (KOCI), 1879, A., 1005.  
 thermochemical researches on (THOMSEN), 1877, ii., 566.  
 specific heat, and latent heat of fusion of (VIOLE), 1879, A., 294.  
 atomic heat of hydrogen in its combination with (BEKETOFF), 1879, A., 590.  
 hydrogenised (TROOST and HAUTEFEUILLE), 1874, 660; (BÖTTGER), 1874, 866; (SMITH), 1875, 424.  
 preparation and properties of (BÖTTGER), 1874, 1139.  
 specific heat of (ROBERTS-AUSTEN and WRIGHT), 1873, 112.  
 reactions of (GLADSTONE and TRIBE), 1878, T., 307.  
 See also Hydrogen and Hydrogenium.  
 behaviour of, in an alcohol flame (WÖHLER), 1877, i., 437.  
 action of, on coal-gas (WILM), 1881, A., 706.  
 action of, on hydrocarbons (COQUILLION), 1873, 1214; 1877, ii., 831.  
 oxidation of (WILM), 1882, A., 1033.  
 amalgamation of (CASAMAJOR), 1878, A., 474.  
 use of, instead of silver in electro-deposition (FRANTZ), 1877, ii., 239.



- Palladium compounds**, heat of formation of (JOANNIS), 1882, A., 1258.  
 with ammonia and mercury (WILM), 1880, A., 854.  
 palladammonium and *sesquichloride* (SAINTE-CLAIRE DEVILLE and DEBRAY), 1878, A., 650.  
 palladio-ditetramine chloride, action of potassium osmate on (GIBES), 1882, A., 146.  
**Palladium chloride**, some reactions of, with potassium ferrocyanide (KERN), 1876, ii., 325.  
 aluminium chloride (WELKOW), 1874, 1065.  
 ammonium chloride (WILM), 1880, A., 854.  
 sodium chloride, adulteration of, with sodium chloride (GAWALOWSKI), 1877, ii., 225.  
 metastannate (DITTE), 1882, A., 809.  
 sodium sulphite (WÖHLER), 1875, 134.  
 potassium and silver thiopalladates (SCHNEIDER), 1873, 1197.  
**Palladium organic compounds**:—  
 potassium cyanide (VIDAU), 1877, i., 456.  
 mercaptide (CLAËSSON), 1877, ii., 295.  
 palladoso-urammonium chloride (*carb-amido-palladious chloride*) (DRECHSEL), 1880, A., 161.  
**Palladium estimation**:—  
 precipitation of, by hydrogen (RUSSELL), 1874, 11.  
**Palladium-hydrogen**. See Palladium, hydrogenised.  
**Palladium-zinc couple** (GLADSTONE and TRIBE), 1879, T., 575.  
**Palm oils**, estimation of neutral fats, and palmitic and oleic acids in (SEAR), 1882, A., 342.  
*Palmella cruenta*, colouring matters of (PHIPSON), 1879, A., 1042; 1880, A., 325.  
**Palmellin** from *Palmella cruenta* (PHIPSON), 1879, A., 1042; 1880, A., 325.  
 decomposition of (PHIPSON), 1879, A., 1042.  
 preservation of solutions of (PHIPSON), 1880, A., 720.  
**Palmitamide** (KRAFFT and STAUFFER), 1882, A., 1274.  
**Palmitic acid**, production of (CARPENTER), 1873, 658.  
 estimation of, in palm oils and autoclaved materials (SEAR), 1882, A., 342.  
**Palmitic aldehyde**, preparation of (KRAFFT), 1880, A., 867.  
**Palmitone** (*dipentadecyl ketone*) (HERCZ), 1877, ii., 425.  
**Palmitonitrile** (KRAFFT and STAUFFER), 1882, A., 1274.  
**Palm-nut cakes**, composition of (LEHMANN), 1876, ii., 323.  
**Palm-nut meal**, composition of (PETERMANN), 1881, A., 301.  
**Pancreas**, hydrolytic ferments of the (BROWN and HERON), 1880, A., 903; 1881, A., 114.  
 trypsin in (PODOLINSKI), 1877, i., 103; (ROBERTS), 1881, A., 1051.  
**Pancreas-peptones** (KISTIAKOWSKY), 1875, 773.  
**Pancreatic digestion**. See Digestion. enzymes. See Enzymes.  
 extracts, estimation of the amylolytic and proteolytic activity of (ROBERTS), 1881, A., 1051.  
 juice of Herbivora (HEIDENHAIN, HENRY and WOLLHEIM), 1877, ii., 204.  
 secretion, researches on (HERTER), 1882, A., 753.  
**Pandermite**. See Priceite.  
**Panification**, digestive ferment produced during (SCHEURER-KESTNER), 1880, A., 776.  
**Papain**. See under Enzymes.  
*Papaver Rhæas*, absence of morphine from the petals of (ATTFIELD), 1874, 911.  
**Papaveraceæ**, alkaloids of (ELJMAN), 1882, A., 1112.  
**Papaverine**, solubility of, in chloroform (NOWAK), 1873, 412, 535.  
 new test for (TATTERSALL), 1879, A., 1067.  
 colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.  
**Papaya oil and papayic acid** (PECKOLT), 1880, A., 129.  
**Papayotin**. See Papain under Enzymes.  
**Paper**, manufacture of, from gombo, and other industrial applications of this plant (LANDRIN), 1875, 387.  
 chemical manufacture of, from wood (ANON.), 1873, 308; (ROSENHAIN), 1876, ii., 234.  
 method of rendering wood and other fibrous substances suitable for pulp to be used in the manufacture of (KEEGAN), 1873, 1069.  
 micrographic study of the manufacture of (GIRARD), 1875, 675.  
 diathermancy of (AYMONNET), 1877, ii., 405.

- Paper**, cause of the acid reaction exhibited by some kinds of (FEICHTINGER), 1882, A., 1339.  
 dendritic spots on (ADRIAN), 1874, 754.  
 glazing of (WURSTER), 1878, A., 184.  
 resin-sizing of (WURSTER), 1878, A., 626; (LUNGE), 1879, A., 994.  
 for pigment or carbon-photography (OTT), 1879, A., 560.  
 detection of arsenic in (HAGER), 1873, 943, 1057.  
 estimation of colour in (WURSTER), 1878, A., 823.  
 estimation of mineral matter in (WURSTER), 1878, A., 528.  
 estimation of starch in (WURSTER), 1879, A., 180.  
 black-blue colour for (ABADIE), 1877, i., 361.  
 carbolic acid-, preparation of (HOMBURG), 1873, 424.  
 tracing- (ANON.), 1873, 659.
- Paperhangings**, detection of arsenical colours on (HAGER), 1873, 1057.
- Papilionaceæ**, ligneous, chemical examination of (FLICHE and GRANDJEAN), 1880, A., 735.
- Para nuts**. See *Bertholletia excelsa*.
- Parabanic acid** (oxalylcarbamide; *oximidocarbamic acid*) (WAGNER and TOLLENS), 1873, 759; (MENSCHUTKIN), 1874, 466, 889.  
 preparation of (TOLLENS), 1873, 283.  
 synthesis of (v. BASAROFF), 1873, 75; (GRIMAU), 1874, 368; 1875, 359.  
 constitution of (CALM), 1879, A., 620.  
 constitution of, and synthesis of its homologues (MENSCHUTKIN), 1874, 466.  
 hydrate of (WAGNER and TOLLENS), 1873, 759; (TOLLENS), 1875, 557.  
 salts of (MENSCHUTKIN), 1874, 889.
- Paracolumbite**. See Para-ilmenite.
- Paraffin**, action of nitric acid on (POUCHET), 1875, 50.  
 estimation of, in stearin candles (DONATH), 1873, 1058.  
 residues and crude paraffin, estimation of water in (BELL), 1875, 104.  
 See also Ozokerite.
- Paraffin oil**. See Petroleum.
- Paraffins** from a lava from Etna (SILVESTRI), 1877, i., 704; 1882, A., 810.  
 from Pennsylvanian petroleum (MORGAN), 1875, 301; (SCHORLEMMER), 1875, 306.
- Paraffins** extracted from the lowest boiling portions of petroleum, action of alcoholic bromides and of hexabromethane in presence of aluminium bromide on (GUSTAVSON), 1881, A., 399.  
 presence of, in plants (GUTZEIT), 1880, A., 914.  
 in commercial water-gas (MORTON and GEYER), 1878, A., 609.  
 and their derivatives, formulation of (ODLING), 1876, ii., 279.  
 boiling points of (GOLDSTEIN), 1879, A., 765; 1882, A., 374.  
 combined action of heat and pressure on (THORPE and YOUNG), 1873, 260.  
 nitration of derivatives of (LAUTERBACH), 1879, A., 700.  
 action of oxygen on (JAZUKOWITSCH), 1876, i., 894.  
 normal (SCHORLEMMER), 1877, ii., 866; 1880, A., 153; (KRAFFT), 1882, A., 1271.  
 problem of estimating the number of (HERMANN), 1880, A., 605.  
 action of sulphur on, at high temperatures (CABOT), 1877, ii., 867.  
*monohaloid*, from secondary and tertiary alcohols, action of triethylamine on (REBOUL), 1881, A., 1024.  
 and additive-products of quinoline, behaviour of, with silver oxide (LA COSTE), 1882, A., 980.  
*mono-* and *di-*haloid, action of water on (NIEDERIST), 1877, ii., 422; 1879, A., 700.  
 See also Hydrocarbons and Olefines.
- Paraffin-series**, hydrazine compounds of the (FISCHER), 1876, i., 576, 911; 1879, A., 450; 1880, A., 234.
- Paraffin-wax** and mineral oil, estimation of, when mixed with other fats or oils (THOMSON), 1878, A., 1010.
- Paraglobulin**, mode of action of, in the coagulation of fibrin (HAMMARSTEN), 1877, i., 727.
- Paragonite** (TSCHERMAK), 1880, A., 533.
- Paraguay tea** (*maté*; *Ilex paraguayensis*) (BYASSON), 1878, A., 440.  
 effect of, on the gases in the blood (D'ARSONVAL and COUTY), 1881, A., 1051.  
 nitrates in (BING), 1881, A., 122.  
 tannin of (ARATA), 1878, A., 581.  
 wax of the leaves of (ARATA), 1878, A., 324.
- Para-ilmenite** (*paracolumbite*) (SHEPARD), 1881, A., 382.

- Paralactic acid.** See under Lactic acid.
- Paralbumin.** See under Albumin.
- Paraldehyde.** See under Acetaldehyde.
- Paraleucaniline.** See under Leucaniline.
- Paramorphs** (GEINITZ), 1877, i., 691.
- Paraphanic acid** (THUDICHUM), 1878, A., 81.
- Pararosaniline.** See under Rosaniline.
- Parasite**, pseudomorph of, after boracite (GEINITZ), 1877, i., 698.
- Parasites**, plant, researches on (KÜHN), 1882, A., 888.
- Parathionic acid** (CLAËSSON), 1879, A., 777.  
from the mother-liquors of corallin (COMMAILLE), 1873, 278.
- Parchment manufacture**, waste material of the, as a source of oxalic acid (ČECH), 1877, ii., 380.
- Parchment-paper**, use of, in osmose (ECKSTEIN), 1881, A., 952.
- "Parchment solution"** consisting of gutta percha softened and extended in ether (ANON.), 1873, 1276.
- Parenchyma** of certain vegetables, chemical composition of (MAUDET), 1874, 184.
- Paricene** (HESSE), 1878, A., 437; 1879, A., 1044.
- Parigenin and parillin** (FLÜCKIGER), 1878, A., 327.
- Parsley oil**, terpene of (v. GERICHTEN), 1876, ii., 78.
- Parsnip oil** (VAN RENESSE), 1873, 642.
- Parsnips**, composition of (CORENWINDER and CONTAMINE), 1880, A., 342.
- Particles**, small, aggregation of (HILGARD), 1881, A., 970.
- Parvoline.** See Dimethylethylpyridine.
- Paste** from rice starch (ANON.), 1873, 1072.  
preparation of a good adhesive and durable (SIEBURGER), 1873, 306.  
polishing-, for wooden furniture (ANON.), 1873, 960.
- Pastinaca sativa**, ethyl compounds in the fruit of (GUTZEIR), 1875, 1247.  
volatile oil of the fruit of (VAN RENESSE), 1873, 642.
- Pasture.** See under Agricultural Chemistry.
- Patina**, formation of (BRÜHL), 1882, A., 670; (WEBER), 1882, A., 1334.
- Paytamine** (HESSE), 1878, A., 437.
- Paytine** (HESSE), 1878, A., 437; (WULFSEBERG), 1881, A., 108.  
supposed identity of aspidospermine and (ARATA), 1881, A., 622.
- Paytone** (HESSE), 1878, A., 437.
- Peacock copper ore.** See Bornite.
- Pea-nut.** See Earth-nut under Agricultural Chemistry.
- Pear wine** (MADER), 1879, A., 1078.
- Peas**, decomposition of, in the intestine of man (RUBNER), 1881, A., 187.  
copper in preserved green (DUPRÉ; PIESSE), 1877, ii., 511.  
See also under Agricultural Chemistry.
- Peat**, Baltic, composition of (THOMS), 1877, ii., 798.  
composition of two samples of (PETERMANN), 1881, A., 641.  
dry distillation of (NIEDERSTADT), 1874, 498.  
See also under Agricultural Chemistry.
- Peat tar**, picene from (BURG), 1881, A., 179.
- Peaty water**, action of air on (HALCROW and FRANKLAND), 1880, T., 506.  
injurious effect of, on meadows (KLIEN), 1880, A., 738.
- Pebbles** from Iona (STANFORD), 1873, 19.
- Pecten irradians**, glycogen and glycine in the muscular tissue of (CHITTENDEN), 1875, 1275.
- Pectic acid**, calcium salt of (FREMY), 1877, i., 230.
- Pectin group** (REICHARDT), 1877, ii., 502.
- Pectolite** (*walkerite*) (HEDDLE), 1882, A., 290.  
pseudomorph after (LEEDS), 1874, 28.
- Pectose** (FREMY), 1877, i., 230.  
certain properties of (FREMY and URBAIN), 1882, A., 420.
- Peganite** of Arkansas, identity of the so-called, with the variscite of Breithaupt, and with the callainite of Damour (CHESTER), 1877, ii., 852.
- Pegmatite veins** of Moos and the minerals contained in them (BRÖGGER), 1882, A., 579.
- Pelagosite** (TSCHERMAK), 1879, A., 604.
- Pelargonic acid.** See Nonoic acid.
- Pélé's hair**, composition of (DANA), 1880, A., 536.
- Pelletierine.** See under Alkaloids.
- Penicillium glaucum**, influence of temperature on the development of (WIESSNER), 1874, 708.  
growth of, in a saccharine liquid (FREMY), 1873, 84.
- "Pennant grits,"** composition of, in contact with, and at a distance from carbonaceous deposits (WETHERED), 1882, T., 79.
- Penninite** (*pennine*) from the Rimpfischwänge (v. HAMM), 1873, 1114.  
See also Chlorite.

- Pentacetylæsculin** (SCHIFF), 1881, A., 180.
- Pentacetyl-*l*-bromæsculin** (LIEBERMANN and KNIETSCH), 1881, A., 108.
- Pentacetylgalactose** (FUDAKOWSKI), 1878, A., 777.
- Pentacetylgalloctannic acid** (SCHIFF), 1874, 269.
- Pentadecic acid** [m.p. 51°] (KRAFFT), 1880, A., 34.
- Pentadecic acid** [m.p. 70°] from *Agaricus integer* (THÖRNER), 1880, A., 44.
- Pentamethylbenzene** (ADOR and RILLET), 1879, A., 527; (FRIEDEL and CRAFTS), 1881, A., 40.
- Pentamethylethyl alcohol** (*tert.-heptylic alcohol*) (BUTLEROFF), 1875, 1248; (KASCHIRSKY), 1879, A., 46; (BOGOMOLETZ), 1881, A., 401.  
hydrate of (ELTEKOFF), 1878, A., 482.
- Pentane** (WISCHNEGRADSKY), 1878, A., 393.  
*di*bromo- and *dichloro-* (*isoamylidenic bromide* and *chloride*), action of ammonia on (MICHAEL), 1882, A., 216.  
*di*bromo-. See also Amylene bromide.  
*dinitro-* (CHANCEL), 1882, A., 824.
- iso***Pentane**, action of bromine on (MERZ and WEITH), 1879, A., 303.
- Pentanephosphonic acid** (*isoamylphosphinic acid*) (v. HOFMANN), 1873, 884.
- n*-**Pentanetricarboxylic acid** (WALTZ), 1882, A., 948.
- Pentaphenylchloroethane** (GUARESCHI), 1878, A., 126.
- Pentathionic acid**. See under Sulphur.
- Pentene**. See Amylene.
- Pentenoic acids**. See Allylacetic acid, Angelic acid, Dimethylacrylic acid, and Tiglic acid.
- Pentenyl alcohol** (*methylallylcarbinol*) (WAGNER), 1882, A., 377.  
See also Vinyloethylcarbinol.
- Pentenylamidophenyl mercaptan** (v. HOFMANN), 1880, A., 389, 885.
- Pentenylamine** and **pentenylthiocarbamide** (v. HOFMANN), 1879, A., 712.
- Pentenylthiocarbimide** (*angelic sulphocarbimide*) (v. HOFMANN), 1875, 564; 1879, A., 712.
- Pentic acid** (DEMARÇAY), 1879, A., 457.
- Pentinene** (*isoprene*), action of halogen acids on, and its bromides, chlorides, and iodides (BOUCHARDAT), 1880, A., 323.
- Pentinene** (*isopropylacetylene*) (FLAWITZKY and KRILOFF), 1878, A., 134.  
oxidation of, and action of sulphuric acid on (FLAWITZKY and KRILOFF), 1878, A., 562.
- Pentinene** (*valerylene*), transformation of, into cymene and hydrocarbons of the benzene series (BOUCHARDAT), 1880, A., 710.  
action of hypochlorous acid on (HAUDST), 1876, i., 693.
- Pentinene** (*piperylene*) and its constitution (v. HOFMANN), 1881, A., 621.
- Pentlandite** in dolerite, from Ovivak (SMITH), 1879, A., 894.
- Pentolic acid**. See Oxypentic acid.
- Pentyl-**. See Amyl-.
- Penwithite**, a new Cornish mineral (COLLINS), 1881, A., 389.
- Peonin**. See Rosolic acid.
- Pepper**, black (BLYTH), 1876, i., 430.  
extraction and estimation of piperine in (CAZENEUVE and CAILLOI), 1877, ii., 516.  
adulteration of (BOUCHARDAT), 1873, 1173; (HILGER), 1876, i., 766.  
examination of (BLYTH), 1875, 292; (HILGER), 1876, ii., 329; 1877, ii., 232; (HERAEUS), 1878, A., 823.
- Peppermint-camphor**. See Menthol under Terpenes.
- Peppermint oil**. See under Oils, vegetable.
- Pepsin** and *isopepsin*. See under Enzymes.
- Peptone**, egg and milk, preparation of (CATILLON), 1881, A., 450.  
fibrin, preparation of (CATILLON), 1881, A., 450.  
action of acetic anhydride on (HOFMEISTER), 1879, A., 950.
- Peptone-forming ferments** in plants (v. GORUP-BESANEZ), 1875, 1286; 1876, i., 738; ii., 322; (v. GORUP-BESANEZ and WILL), 1876, ii., 322; (KRAUCH), 1882, A., 880.  
in saliva (MUNK), 1877, ii., 347.
- Peptones** (KOSSEL), 1876, ii., 535; 1879, A., 811; (HENNINGER), 1878, A., 802, 989; (PEKELHARING), 1880, A., 901; (TANRET), 1881, A., 832; 1882, A., 876; (WURTZ; v. POEHL), 1882, A., 536.  
in the blood (HOFMEISTER), 1882, A., 78.  
presence of, in plants (SCHULZE and BARBIERI), 1882, A., 318.  
production of, in vetch seeds, by a diastatic ferment (v. GORUP-BESANEZ), 1875, 1286.



- Peptones**, hydration processes occurring during the formation of, from albumin (DANILEWSKY), 1882, A., 238.  
 preparation of (PEKELHARING), 1880, A., 901; (CATILLON), 1881, A., 449.  
 chemical nature of (HERTH), 1879, A., 660.  
 chemical composition of (KOSSEL), 1879, A., 811.  
 composition and physiological function of (MALY), 1875, 471.  
 function of, in nutrition (PLÓSZ), 1875, 95; (PLÓSZ and GYERGYAI), 1875, 1272.  
 influence of, on the diastatic action of saliva (CHITTENDEN and ELY), 1882, A., 1117.  
 action of bile on (MOLESCHOTT), 1877, ii., 347.  
 action of the liver on (SEEGEN), 1882, A., 540.  
 regeneration of albumin from (HOFMEISTER), 1879, A., 950.  
 new reaction for (ADAMKIEWICZ), 1875, 919.  
 of beer worts (GRIESSMAYER), 1877, ii., 521.  
 pancreas- (KISTIAKOWSKY), 1875, 773.  
 estimation of (DEFRESNE), 1881, A., 947.  
 estimation of, in plants (SCHULZE and BARBIERI), 1881, A., 312.  
 See also Proteids.
- Perbromic acid.** See under Bromine.  
**Perchloric acid.** See under Chlorine.
- Perchlorination** (MERZ, ZETTER, RUOFF and MOË), 1879, A., 721.
- Pereirine** (HESSE), 1878, A., 433; 1880, A., 676.
- Pereiro bark**, alkaloids of (HESSE), 1878, A., 433; 1880, A., 675.
- Periclasé**, composition of (COSSA), 1878, A., 115.  
 See also Magnesium oxide.
- Peridot**, artificial formation of (LECHARTIER), 1873, 40.  
 artificial production of, in the presence of steam at the ordinary atmospheric pressure (MEUNIER), 1882, A., 286.  
 titaniferous, from Zermatt (DAMOUR), 1881, A., 693.
- Periodic acid.** See under Iodine.
- Periodic law** (MEYER), 1880, A., 605; 1881, A., 138; (MENDELÉEFF), 1881, A., 138.
- Periodides.** See under Iodine.
- Periosteum**, development of the (HEITZMANN), 1874, 596.
- Perisperm**, digestion of the (VAN TIEGHEM), 1877, ii., 349.
- Perkin's reaction**, interpretation of syntheses by (FITTIG), 1882, A., 190.
- Perlite** (ROSTER), 1878, A., 282.  
 solvent action of gypsum on (COSSA), 1873, 1202.
- Permanganic acid.** See under Manganese.
- Pernitric acid and pernitric oxide.** See under Nitrogen.
- Perovskite** (HESSENBERG), 1873, 857; (BAUMHAUER), 1881, A., 398.  
 of Val Malenco (STRÜVER), 1881, A., 1002.  
 as a microscopical constituent of Bohemian nepheline-picrite (BOŘICKÝ), 1878, A., 279.
- Peroxides** (FAIRLEY), 1877, i., 1125.  
 function of, in the galvanic battery (v. BEETZ), 1875, 222.  
 volumetric estimation of (TERREIL), 1881, A., 843.
- Peroxyhæmoglobin.** See Methæmoglobin under Hæmoglobin.
- Persea Lingue** and its tannin, chemical examination of (ARATA), 1881, A., 600.
- Persian ammonia** (HIRSCHSOHN), 1878, A., 158.
- Persian-red** (*chrome-red*) (PRINVAULT), 1876, ii., 340.
- Persicein, persicin and persiretin** (ROTHER), 1878, A., 801.
- Persio**, detection of, in wines (HAAS), 1882, A., 1006.
- Perspiration**, abnormal presence of uric acid in (BOUCHERON), 1881, A., 1161.  
 influence of the secretion of, on the elimination of nitrogenised decomposition products (OPPENHEIM), 1880, A., 818.  
 and respiration, comparative examination of the quantities of carbon dioxide excreted by, in different animals (PORT), 1876, i., 721.
- Persulphuric acid.** See under Sulphur.
- Perthiocyanic acid** (ATKINSON), 1877, ii., 254.  
 conversion of, into potassium thiocyanate (STEINER), 1882, A., 1274.
- Perthiocyanogen** (SCHLAGDENHAUFFEN and WURTZ), 1878, A., 36.  
 transformation of (PONOMAREFF), 1875, 358.
- Peru balsam.** See Balsam.
- Petalite** (DOELTER), 1881, A., 694.  
 from Elba (RAMMELSBURG), 1878, A., 387.  
 See also Felspar.

- Petrocene** (PRUNIER), 1879, A., 1026.  
 obtained from the highest boiling portions of American petroleum (v. HEMILIAN), 1877, ii., 867.  
 a product of the destructive distillation of petroleum (SADTLER and McCARTER), 1881, A., 1128.
- Petrographico-geological observation** on the west coast of Spitzbergen (v. DRASCHE), 1875, 874.
- Petrography** of the Philippine and Palau Islands (OEBBEKE), 1882, A., 1034.
- Petroleum, mineral and paraffin oils** (HÖRLER), 1880, A., 199.  
 American, hydrocarbons from (v. HEMILIAN), 1877, ii., 867; (PRUNIER), 1879, A., 447, 1025; (BEILSTEIN and KURBATOFF), 1881, A., 159; (SADTLER and McCARTER), 1881, A., 1128.  
 American and Caucasian (OGLOBLIN), 1881, A., 330.  
 decomposition of hydrocarbons of, at low temperatures (GUSTAVSON), 1882, A., 27, 374.  
 American and Galician (FAUCK), 1873, 308.  
 American and Russian, investigation of (BIEL), 1879, A., 1076.  
 and the employment of heavy mineral oils in lamps (LISSENKO), 1878, A., 539.  
 Caucasian (BEILSTEIN and KURBATOFF), 1881, A., 159, 1020; (SCHÜTZENBERGER and IONINE), 1881, A., 705; (MARKOWNIKOFF and OGLOBLIN), 1882, A., 390.  
 Pennsylvanian, paraffins in (MORGAN), 1875, 301; (SCHORLEMMER), 1875, 306.  
 crystalline products from (PRUNIER and DAVID), 1879, A., 309.  
 origin of (MENDELEEFF), 1877, ii., 283.  
 refining of crude (OTT), 1877, ii., 376.  
 properties of good (ANON.), 1874, 836.  
 absorption-bands of (SCHÖNN), 1878, A., 693.  
 occurrence and composition of acids in (HELL and MEDINGER), 1875, 248.  
 oxidation of an acid contained in crude (HELL and MEDINGER), 1877, ii., 432.  
 heptanes from (SCHORLEMMER), 1873, 319.  
 distillates, fluorescent relations of certain solid hydrocarbons found in (MORTON), 1873, 235, 590; 1874, 14.
- Petroleum, mineral and paraffin oils**, relative proportions of olefines in shale products and (ALLEN), 1882, A., 100.  
 mineral oils, etc., continuous distillation of, at constant levels, and with fractional condensation (FUIST), 1873, 660.  
 flashing point of (LIEBERMANN), 1882, A., 1326.  
 new test for the inflammability of (VAN DER WEYDE), 1873, 532.  
 apparatus for testing the inflammability of (ENGLER and HAASS), 1881, A., 469.  
 and other combustible liquids, explosion of (WEBER), 1881, A., 1181.  
 decomposition of, by heat (LETNY), 1878, A., 961.  
 and their action on metals (MACADAM), 1878, A., 355.  
 method of extinguishing burning (ANON.), 1875, 492.  
 use of, in lamps (LISSENKO), 1878, A., 539.  
 cost of lighting and heating by gas and (ANON.), 1877, ii., 949.  
 examination of (BRENNEN), 1880, A., 589; (SKALWEIT), 1881, A., 650.  
 analysis of (RÉMONT), 1880, A., 683; 1881, A., 202.  
 estimation of, when mixed with other fats or oils (THOMSON), 1878, A., 1010.
- Petroleum-coke**, products from (PRUNIER and VARENNE), 1881, A., 239.
- Petroleum-gas**, products from the manufacture of (RUDNEFF), 1881, A., 329.
- Petroleum mineral (torbanite)**, formation and constitution of (SKEY), 1875, 435.  
 inorganic constituents of (DIXON), 1881, A., 988.
- Petroleum residue** from schists (BONG), 1881, A., 208.
- Petroleum shale**, composition of (LIVERSIDGE), 1881, A., 980.
- Petroleum spirit** and allied liquids, characteristic differences between (ALLEN), 1879, A., 1063; 1881, A., 651.
- Petzite** (BURKART), 1874, 32; (GENTH), 1875, 431.
- Peucedanin (imperatorin)** (HLASIWETZ and WEIDEL), 1875, 256.  
 and its products of decomposition (HEUT), 1875, 772.
- Phacolite** of Richmond, Victoria, Australia (VOM RATH), 1876, i., 885.

- Phacozymase**, soluble (BÉCHAMP), 1880, A., 816.
- Phæactinite**, a transformation product of hornblende (BERTELS), 1875, 550.
- Phanerogams**, chlorophyll in the epidermis of foliage of (STÖHR), 1880, A., 910.
- Pharmacolite** (SCHRAUF), 1881, A., 532.
- Pharmacosiderite**, occurrence of, in greenstone (COLLINS), 1877, ii., 283.
- from the Garonne mine (PISANI), 1877, ii., 851.
- Phaseolus multiflorus* (scarlet runner), function of lime in the germination of (BÖHM), 1875, 1284.
- absorption of lime salts and water by the leaves of (BÖHM), 1877, ii., 209.
- Phenacetin** (RASIŃSKI), 1882, A., 1288.
- Phenacetolin** as an indicator (LUNGE), 1882, A., 774.
- Phenacite**. See Phenakite.
- Phenacilic bromide**. See Acetophenone,  $\omega$ -brom-.
- Phenacilic sulphocyanide** or thiocyanate. See Acetophenone, thiocyan-.
- Phenakite** (*phenacite*), crystallography of (SELIGMANN), 1881, A., 397.
- Phenamido-**. See Anilido- and Phenyl-amido-.
- Phenanthraquinol** (GRAEBE), 1873, 895.
- Phenanthraquinone** (FITTIG and OSTERMAYER), 1873, 892; (GRAEBE), 1873, 895; (LIMPRICHT), 1873, 897; (ANSCHÜTZ and SCHULTZ), 1877, ii., 491; 1879, A., 538; (CARNELLEY), 1880, T., 712.
- from phenanthrol (ANSCHÜTZ and v. SIEMIENSKI), 1880, A., 891.
- preparation of (SCHMITZ), 1879, A., 165.
- constitution of (ANSCHÜTZ and SCHULTZ), 1879, A., 539; (JAPP), 1880, T., 411.
- reaction of (LAUBENHEIMER), 1875, 637.
- action of acetone on, both alone and in presence of ammonia (JAPP and STREATFIELD), 1882, T., 270.
- action of aldehydes on, in presence of ammonia (JAPP and WILCOCK), 1881, T., 225.
- action of aldehydes on, in presence of ammonia (JAPP and STREATFIELD), 1882, T., 146.
- action of ammonia on (ANSCHÜTZ and SCHULTZ), 1877, ii., 491; (v. SOMMARUGA), 1879, A., 718; (ZINCKE), 1880, A., 48.
- Phenanthraquinone**, action of benzaldehyde on, both alone and in the presence of ammonia (JAPP and WILCOCK), 1880, T., 661.
- action of ethylic acetacetate on (JAPP and STREATFIELD), 1882, T., 276.
- action of quick-lime on (ANSCHÜTZ and SCHULTZ), 1877, i., 210.
- action of methylamine on (ZINCKE), 1880, A., 48.
- action of zinc ethyl on (JAPP), 1879, T., 526; 1880, T., 408.
- distillation of, with soda-lime (GRAEBE), 1873, 635.
- oxidation of, by potassium permanganate (ANSCHÜTZ and JAPP), 1878, A., 511.
- diphenyleneglycollic acid from (v. BAEYER and FRIEDLÄNDER), 1877, ii., 336; (FRIEDLÄNDER), 1877, ii., 492.
- $\alpha$ -nitro- (SCHMIDT), 1879, A., 941.
- 4-nitro- (ANSCHÜTZ and SCHULTZ), 1877, i., 210.
- dinitro- (GRAEBE), 1873, 895; (SCHULTZ), 1880, A., 814.
- 2:2'-dinitro- (STRUVE), 1877, ii., 902.
- Phenanthraquinonecarboxylic acid** (JAPP and SCHULTZ), 1878, A., 77.
- Phenanthraquinoneimide** (ANSCHÜTZ and SCHULTZ), 1879, A., 539; (ZINCKE), 1880, A., 48.
- Phenanthrene** (FITTIG), 1873, 750; (FITTIG and OSTERMAYER), 1873, 892; (GRAEBE), 1873, 894; (LIMPRICHT), 1873, 897; (ANSCHÜTZ and SCHULTZ), 1877, ii., 491; (ANSCHÜTZ), 1878, A., 984; (CARNELLEY), 1880, T., 711.
- in idryl (GOLDSCHMIEDT), 1878, A., 155.
- purification of (SCHMIDT), 1874, 581.
- synthesis of (GRAEBE), 1873, 633, 896; 1874, 471; (BARBIER), 1877, i., 76.
- synthesis of, from *o*-bromobenzyllic bromide (JACKSON and WHITE), 1881, A., 822.
- constitution of (SCHULTZ), 1878, A., 511; 1879, A., 538, 653; 1880, A., 814; (JAPP), 1880, T., 83.
- perchlorination of (MERZ ZETTER, RUOFF and MOË), 1879, A., 721.
- reduction of (GRAEBE), 1873, 896.
- colour reaction of, with antimony and bismuth trichlorides (SMITH), 1879, A., 831.
- derivatives of (STRUVE), 1877, ii., 902.
- dibromide (ANSCHÜTZ), 1878, A., 984.
- hydrides (BARBIER), 1874, 1092.

- Phenanthrene**,  $\alpha$ -,  $\beta$ -, and  $\gamma$ -amido- (SCHMIDT), 1879, A., 941.  
 bromo- and bromonitro- (ANSCHÜTZ), 1878, A., 984.  
*di*-, *tri*-, *tetra*-, *hexa*-, and *hepta*-bromo- and -chloro- (ZETTER), 1878, A., 510.  
*penta*bromo- and *octo*chloro- (MERZ and WEITH), 1878, A., 76.  
 $\alpha$ -,  $\beta$ -, and  $\gamma$ -nitro- (SCHMIDT), 1879, A., 941.
- Phenanthrene-acetonquin** and -acetonquinimide (JAPP and STREITFELD), 1882, T., 276.
- Phenanthrenebenzalquin** (JAPP and WILCOCK), 1880, T., 666.
- $\alpha$ -**Phenanthrenecarboxylic acid** (JAPP and SCHULTZ), 1878, A., 77.
- Phenanthrenecarboxylic acids**,  $\alpha$ - and  $\beta$ - (JAPP), 1880, T., 83.
- Phenanthrenedisulphonic acid** and its derivatives (FISCHER), 1880, A., 478.  
 action of phenols on (FISCHER), 1880, A., 474.
- Phenanthrene-ethylquinol**. See Ethylphenanthraquinol.
- Phenanthrenehydroquinone**. See Phenanthraquinol.
- Phenanthrenequinone**. See Phenanthraquinone.
- Phenanthrene-series**, specific and molecular volumes of some compounds of the (RAMSAY), 1881, T., 63.
- "**Phenanthrenesulphoin-resorcin**" (FISCHER), 1880, A., 474.
- Phenanthrenesulphonic acid**, bromo-, salts of (ANSCHÜTZ and v. SIEMIENSKI), 1880, A., 891.
- $\alpha$ -**Phenanthrenesulphonic acid** (GRAEBE), 1873, 896.
- Phenanthrol** (REHS), 1878, A., 76.
- Phenanthroline** and its derivatives (SKRAUP), 1882, A., 1111.
- Phenazine** (*azophenylene*) (CLAUS), 1873, 1141; 1875, 646, 898; (CLAUS and MOSER), 1878, A., 865; (CLAUS and MAY), 1882, A., 516.  
 nitro-, formation of (CLAUS), 1875, 647.
- Phenethylamine**. See Phenylethylamine.
- Phenetol** (*phenol ethyl ether*), new mode of formation of (KASTROFF), 1878, A., 145.  
 behaviour of, in the animal body (KOSSEL), 1881, A., 631.  
 $o$ -amido- (GROLL), 1876, i., 247.  
 preparation of (FÖRSTER), 1880, A., 463.  
 4:2- and 2:4-bromonitro- and -chloronitro- (HALLOCK), 1881, A., 595.
- Phenetol** (*phenol ethyl ether*),  $\omega$ -bromo- $o$ - and - $p$ -nitro- (WEDDIGE), 1880, A., 316.  
 2:6:4-dichloramido- (JAEGER), 1875, 1260.  
 $m$ -nitro- (BANTLIN), 1879, A., 238.  
 $p$ -nitro- (HALLOCK), 1881, A., 595.  
 preparation of (WILLGERODT), 1882, A., 396, 953.  
 2:4-dinitro- (SALKOWSKI and REHS), 1874, 801; (WILLGERODT), 1879, A., 716.  
 preparation of (AUSTEN), 1875, 1022.  
 2:5-dinitro- and 4:2-nitramido- (ANDREAE), 1880, A., 466.  
 2:4:6-trinitro- (AUSTEN), 1875, 1022; (WILLGERODT), 1879, A., 923.
- Phenoglucol** (GAUTIER), 1881, A., 272.
- Phenol**, pure (BICKERDIKE), 1875, 1259.  
 formation of, from putrefying albuminoid matter (ODERMATT), 1879, A., 1038.  
 formation of, in the animal body (SALKOWSKI), 1877, ii., 504; (ENGEL), 1881, A., 114.  
 formation of, in the intestines of Herbivora (TAPEINER), 1882, A., 240.  
 preparation of (ALEXÉEFF), 1881, A., 723.  
 direct production of, from benzene (KINGZETT), 1882, A., 395.  
 electrolysis of (GOPPELSROEDER), 1876, ii., 308; (BARTOLI and PAPA-SOGLI), 1882, A., 407.  
 decomposition of, at a red heat (KRAMERS), 1877, ii., 613.  
 mutual solubility of water and (ALEXÉEFF), 1877, ii., 472.  
 action of aluminium iodide on, in presence of aluminium (GLADSTONE and TRIBE), 1881, T., 9.  
 action of ammonium zinc chloride on (MERZ and WEITH), 1880, A., 813.  
 action of benzenesulphonic chloride on (SCHIAPARELLI), 1881, A., 602.  
 action of benzotrichloride on (DOEBNER and STACKMANN), 1877, ii., 327; 1878, A., 321; (DOEBNER), 1880, A., 239.  
 action of carbon tetrachloride on, in alkaline solution (REIMER and TIEMANN), 1877, i., 77.  
 action of chlorine on a mixture of aniline and (JACQUEMIN), 1873, 1147.  
 action of chromyl dichloride on (ETARD), 1881, A., 583.



- Phenol**, action of lead oxide on (BEHR and VAN DORP), 1874, 798.  
 action of lead oxide on a mixture of  $\alpha$ -naphthol and (GRAEBE and KNECHT), 1880, A., 664.  
 action of nitric acid on (GOLDSTEIN), 1879, A., 148.  
 action of nitrogen peroxide on (LEEDS), 1881, A., 584.  
 action of nitrosyl chloride on (TILDEN), 1874, 851.  
 action of nitrous acid on (LIEBERMANN), 1875, 167; (WESELSKY), 1875, 568.  
 action of the vapour of, on organic matter at high temperatures (V. THAN), 1880, A., 72.  
 action of fused soda on (BARTH and SCHREDER), 1879, A., 633.  
 comparative experiments on the behaviour of thymol and, with different reagents (HIRSCHSOHN), 1881, A., 942.  
 distinction between creosote and (ANON.), 1873, 193.  
 as a probable source of indigotin (PHIPSON), 1874, 692.  
 colouring matter derived from (ERHART), 1878, A., 315.  
 dye formed from, by the action of nitrous acid (LIEBERMANN), 1875, 167.  
 quinine salts of (V. JOBST), 1876, i., 610.  
 derivatives, constitution of (KÖRNER), 1876, i., 228.  
   thermochemical study of (LUGININ), 1878, A., 832; 1879, A., 874.  
   of the cinchona alkaloids (HESSE), 1876, ii., 313, 639.  
 ethyl ether of. See Phenetoil.  
 methyl ether of. See Anisoil.  
 use of, in leather dressing (BAUDET), 1873, 206.  
 pure, is it poisonous? (HUSEMANN), 1873, 79.  
 behaviour of, in the animal organism (BAUMANN and HERTER), 1877, i., 486; (BAUMANN), 1879, A., 816.  
 influence of, on germination (HECKEL), 1879, A., 172; 1880, A., 335.  
**Phenol**, *o*-amido- (FÖRSTER), 1880, A., 463.  
   action of carbon disulphide on (DÜNNER), 1876, ii., 204.  
   reaction of, with acetic and benzoic acids (LADENBURG), 1877, i., 302.  
   reaction of, with formic and oxalic acids (LADENBURG), 1877, ii., 752.  
   new colouring matter from (FISCHER), 1879, A., 924.
- Phenol**, *o*-amido-, hydrochloride of, action of aqueous chloride of lime on an aqueous solution of (SCHMITT), 1873, 280.  
*o*- and *p*-amido-, constitution of (KÖRNER), 1876, i., 234.  
   action of ethylic chloroformate on (GROENVIK), 1877, i., 472.  
*p*-amido-, conversion of, into *tri*- and *tetra*-chloroquinone and *trichloro*-quinonechlorimide (SCHMITT and ANDRESEN), 1882, A., 611.  
 amido-, a fourth (FITTICA), 1881, A., 47.  
 amido-, isomeric, action of methylic iodide on (GRIESS), 1880, A., 636.  
 2:4-diamido-, and its salts (V. HEMILIAN), 1876, i., 918.  
   and its nitro-substitution products (STUCKENBERG), 1877, ii., 193; 1881, A., 92.  
   benzoyl compounds of (STUCKENBERG), 1877, ii., 193.  
 2:6-diamido-, and its derivatives (STUCKENBERG), 1877, ii., 475.  
 2:4:6-triamido-, action of bromine on, in presence of water (WEIDEL and GRUBER), 1877, ii., 778.  
*o*- and *p*-bromo-, 4:2-bromonitro- and 2:4:6-bromodinitro- (HÜBNER and BRENNEN), 1873, 751.  
*o*-, *m*-, and *p*-bromo- (KÖRNER), 1876, i., 228.  
*m*-bromo- (WURSTER and NÖLTING), 1874, 1163.  
 2:6-dibromo- (V. BAEYER), 1880, A., 658.  
 2:4:6-tribromo- (V. SCHMIDT), 1878, A., 726; (BENEDIKT), 1879, A., 55; (BAUMANN and BENEDIKT), 1879, A., 789.  
   action of nitric acid and of potassium sulphite on (ARMSTRONG and HARROW), 1876, i., 477.  
   bromide (BENEDIKT), 1879, A., 717; 1880, A., 246.  
*tetra*bromo- (BENEDIKT), 1880, A., 246.  
 2:6:4-dibromamido- (BÖHMER), 1882, A., 398.  
 4:2- and 5:2-bromonitro- and their salts (LAUBENHEIMER), 1878, A., 976.  
*m*-bromodinitro-, and its derivatives, preparation of (KÖRNER), 1876, i., 321.  
 2:4:6-bromodinitro- (RENNIE), 1882, T., 225.  
 4:2:6-bromodinitro- and its salts (AUSTEN), 1879, A., 50.

**Phenol**, 2:4:6- and 4:2:6-bromodinitro- (ARMSTRONG and PREVOST), 1874, 1164.  
 2:4:6- and 4:2:6-bromodinitro- and 4:6:2-dibromonitro- (ARMSTRONG and BROWN), 1874, 1164.  
 bromodinitro-, isomeric, preparation of (KÖRNER), 1876, i., 229.  
 4:6:2-dibromonitro- (GOLDSTEIN), 1879, A., 148.  
 4:6:2- and 2:6:4- dibromonitro-, constitution of (KÖRNER), 1876, i., 229.  
 chloro-derivatives of, disinfecting power of (ČECH), 1881, A., 126.  
*o*-chloro- (FAUST and MÜLLER), 1873, 65.  
   from the volatile nitrophenol (MÜLLER), 1874, 157.  
*m*-chloro- (MÜLLER), 1874, 157; (KRAMERS), 1875, 157; (UHLEMANN), 1878, A., 978.  
   and its nitro-derivatives (FAUST and MÜLLER), 1875, 156.  
*p*-chloro-, action of potash on (FAUST), 1874, 61.  
*o*- and *p*-chloro-, from the chloranilines (BEILSTEIN and KURBATOFF), 1874, 806.  
*o*-, *m*-, and *p*-chloro-, constitution of (KÖRNER), 1876, i., 235.  
*o*- and *p*-chloro-, 2:4- and 2:6-dichloro- and 2:4:6-trichloro-, constitution of (FAUST), 1873, 633.  
 2:4-dichloro-, conversion of, into 1:2:4-trichlorobenzene (BEILSTEIN and KURBATOFF), 1875, 1037.  
 2:3:5(?)-trichloro-, from trichloramidophenol (HIRSCH), 1881, A., 164.  
 2:4:6-trichloro-, action of potassium sulphite on (ARMSTRONG and HARROW), 1876, i., 474.  
*per*chloro-, chloride (BEILSTEIN), 1879, A., 463.  
 2:6:4-dichloramido- (JAEGER), 1875, 1260.  
 chloramidodithio- (ALLERT), 1881, A., 902.  
 4:2-chloronitro-, crystallographic constant of (LE VALLE), 1880, A., 384.  
 5:2-chloronitro- (UHLEMANN), 1878, A., 978.  
 2:4- and 6:2-chloronitro- (FAUST and MÜLLER), 1873, 65.  
 2:4-, 4:2-, and 6:2-chloronitro-, constitution of (FAUST), 1873, 633.  
 2:4- and 6:2-chloronitro-, 6:2:4-chlorodinitro- and 6:4:2-chloronitramido-, and their salts (FAUST and MÜLLER), 1875, 156.

**Phenol**, 2:4-, 4:2- and 6:2-chloronitro-, 6:2:4- and 4:2:6-chlorodinitro-, 4:6:2- and 2:6:4-dichloronitro- (MÜLLER), 1874, 157.  
 2:6:4-dichloronitro-, decomposition of, by heat (ARMSTRONG and BROWN), 1874, 1165.  
 4:2:6-chlorodinitro-, preparation and properties of (KÖRNER), 1876, i., 230.  
 6:2:4-chlorodinitro- (FAUST and MÜLLER), 1873, 65; 1875, 156.  
 4:2:6- and 6:2:4-chlorodinitro-, and 2:6:4-dichloronitro-, constitution of (FAUST), 1873, 633; 1875, 364.  
 4:2:6- and 6:2:4-chlorodinitro-, and 4:6:2-dichloronitro- (ARMSTRONG), 1874, 804.  
 chlorodinitro-, isomeric (SMITH and PEIRCE), 1880, A., 392.  
*o*-, *m*-, and *p*-iodo- (LOBANOFF), 1874, 259.  
   constitution of (KÖRNER), 1876, i., 235.  
*α*- and *β*-iodo-2-nitro-, and 2:4-iodonitro- (HÜBNER), 1874, 801.  
 2:6:4-diiodonitro- (POST and BRACKEBUSCH), 1874, 476.  
 4:2:6-iododinitro-, preparation and properties of (KÖRNER), 1876, i., 230.  
 nitro- [in *p*. 7°] (POST), 1873, 903.  
 nitro- (two) (FITTICA), 1881, A., 46, 47; 1882, A., 51.  
 nitro-, Fittica's fourth (NATANSON), 1880, A., 463.  
*o*-nitro-, action of chlorine and bromine on (ARMSTRONG and PREVOST), 1874, 1164.  
   action of nitric acid on (GOLDSTEIN), 1879, A., 148.  
   behaviour of, with sulphuric acid (ARMSTRONG and BROWN), 1874, 1164.  
   oxidation of (GOLDSTEIN), 1874, 1092.  
   derivatives of (BENDIX), 1879, A., 314.  
*m*-nitro-, and its derivatives (FITTIG), 1874, 583; (BANTLIN), 1879, A., 237.  
   conversion of, into *tri*nitroresorcinol (BANTLIN), 1877, ii., 475.  
*p*-nitro- (SALKOWSKI), 1874, 467.  
   conversion of, diazonitrobenzene into (FITTIG), 1874, 696.  
   sulphating (POST), 1881, A., 92.  
*o*-, *m*- and *p*-nitro-, constitution of (KÖRNER), 1876, i., 234.  
   salts of, physical and chemical properties of (POST and MEHRTENS), 1876, i., 579.

- Phenol**, *o*-, *m*- and *p*-nitro-, heat of substitution of (LUGININ), 1879, A., 768.  
*o*- and *p*-nitro-, 2:4- and 2:6-dinitro-, and 2:4:6-trinitro-, constitution of (FAUST), 1873, 633.  
*d*-nitro-, action of benzoic chloride on (GOLDSTEIN), 1876, ii., 298.  
 2:4-dinitro-, reduction of (v. HEMILIAN), 1876, i., 918.  
 2:6-dinitro-, derivatives of (SALKOWSKI and REHS), 1874, 801.  
 2:4- and 2:6-dinitro- (HÜBNER and SCHNEIDER), 1873, 1030; (KÖRNER), 1876, i., 229; (HÜBNER, BABCOCK and SCHAUMANN), 1879, A., 928.  
 physical and chemical properties of the salts of (POST and MEHRENS), 1876, i., 579.  
 2:3-, 2:5-, and 3:4-dinitro- (BANTLIN), 1879, A., 238.  
 2:5- and 3:4-dinitro-, and 3:4:6-trinitro- (BANTLIN), 1875, 640.  
 2:4:6-trinitro-. See Picric acid.  
 4:2- and 6:2-nitramido- (STUCKENBERG), 1877, ii., 474.  
 4:2-nitramido-, and its nitro-substitution products (STUCKENBERG), 1877, ii., 193; 1881, A., 92.  
 formation of, from nitrophenylenediamine (BARBAGLIA), 1875, 273.  
 4:6:2-dinitramido-. See Pieramic acid.  
*p*-nitroso-. See Quinoneoxime.  
 thio-. See Phenyl mercaptan.
- Phenol, detection and estimation**:—  
 tests for (HAGER), 1873, 93; (PLUGGE), 1873, 533; (POLLACCI), 1874, 607; (JACQUEMIN), 1874, 922; (LINDO), 1877, ii., 919; (DAVY), 1878, A., 809; (ALLEN), 1879, A., 182; (WALLER), 1881, A., 655.  
 Lex's test for, with ammonia and bleaching powder (SALKOWSKI), 1873, 534.  
 detection of, in urine (ENGEL), 1881, A., 115.  
 testing urine for, by the pine-wood reaction (T. and D. TOMMASI), 1882, A., 245.  
 estimation of (KOPPESCHAAR), 1877, i., 746; (DEGENER), 1878, A., 918; (SALOMON), 1882, A., 339; (GIACOSA), 1882, A., 778.  
 estimation of, in surgical dressings (SEUBERT), 1882, A., 106.  
 estimation of, in urine (CLOËTTA and SCHÄR), 1882, A., 106.  
 See also Carbolic acid.
- Phenols** (HÜBNER), 1873, 751; (POST), 1875, 255.
- Phenols**, substituted (PETERSEN), 1875, 762.  
 trihydric, from beechwood tar (v. HOFMANN), 1878, A., 417.  
 synthesis of (LIEBERMANN), 1882, A., 171, 727.  
 constitution of the substituted (POST), 1874, 798.  
 etherification of (MENSCHUTKIN), 1878, A., 574; 1879, A., 215; 1881, A., 144, 146; (MERZ and WEITH), 1881, A., 264.  
 action of amides on (GUARESCHI), 1874, 261, 584.  
 action of aromatic hydroxy-acids on (MICHAEL), 1881, A., 592.  
 action of benzotrichloride on (DOEBNER), 1878, A., 873; 1880, A., 239, 644; 1881, A., 165; 1882, A., 956.  
 substituted, action of carbon tetrachloride on (HASSE), 1878, A., 415.  
 action of some diazosulphonic acids on (GRIESS), 1879, A., 315.  
 action of ethylic acetoacetate on, in presence of dehydrating agents (WITTENBERG), 1882, A., 1289.  
 action of ethylic chloroformate on (BENDER), 1881, A., 48.  
 action of, on halogen-derivatives of fatty acids (SAARBACH), 1880, A., 392.  
 action of nitrosodimethylaniline on (MELDOLA), 1880, A., 881.  
 action of nitrous acid on (LIEBERMANN), 1874, 693; 1875, 167.  
 action of phosphoryl chloride on (WEBER and HEIM), 1882, A., 839.  
 action of, on thiocarbimides (MIQUEL), 1877, ii., 871.  
 connection between the substituted benzenes and (BEILSTEIN and KURBATOFF), 1875, 362.  
 direct introduction of carboxyl-groups into (SENHOFER and BRUNNER), 1881, A., 265; (SENHOFER and SARLAY), 1881, A., 1140.  
 simple method for the preparation of the ethereal salts of (RASINSKI), 1882, A., 1288.  
 compounds of, with aldehydes (v. BAeyer), 1873, 501; (TER MEER), 1875, 158.  
 compounds of, with phthalic acid (v. BAeyer), 1877, i., 195; 1880, A., 650.  
 iodated derivatives of (KAEMMERER and BENZINGER), 1878, A., 574.  
 behaviour of, in the animal body (BAUMANN and HERTER), 1877, i., 486; (BAUMANN), 1879, A. 816.

- Phenol colouring matters.** See under Colouring Matters.
- Phenol hydrate** (ALEXÉEFF), 1882, A., 611.
- Phenolaniline**, 4:2:6-chlorodinitro- (SMITH and PEIRCE), 1880, A., 392.
- Phenolbisdiazobenzene.** See Benzene-azohydroxybenzeneazobenzene under Azo.
- Phenolcarboxylic acid.** See Hydroxybenzoic acids and Salicylic acid.
- Phenolcyanine** (PHIPSON), 1873, 1041.
- Phenoldicarboxylic acid.** See Hydroxyisophthalic acids.
- Phenoldisulphonic acid** from the mother liquors of corallin (COMMAILLE), 1873, 278.
- $\alpha$ -Phenoldisulphonic acid**, action of bromine on (V. SCHMIDT), 1878, A., 725.  
derivatives of (BARTH and V. SCHMIDT), 1879, A., 933.  
*p*-amido-, and its derivatives (LIMPRICHT), 1882, A., 1075.
- Phenol-forming substance** in human urine (MUNK), 1876, ii., 212; (SALKOWSKI), 1877, i., 330.
- Phenolglucoside**, synthesis of (MICHAEL), 1879, A., 1038.
- Phenolglycerin** (REICHL), 1880, A., 426.
- Phenolguanidine.** See Guanidophenol.
- Phenolhydrophthalidin**, and *dichloro*- (V. BAEYER), 1880, A., 656.
- Phenolite** from Fernando de Noronha (V. GÜMBEL), 1881, A., 391.
- "Phenolmethylguanidine, dinitro-"** (GRIESS), 1882, A., 969.
- Phenoloxalic acid** (LEEDS), 1882, A., 47.
- Phenolphosphenylic acid** (MICHAELIS and KAMMERER), 1876, i., 597.
- Phenolphthalein** (V. BAEYER and BURKHARDT), 1878, A., 866.  
conversion of diphenylphthalide into (V. BAEYER), 1879, A., 637; 1880, A., 652.  
formation of, from phenol and phthalic acid (V. BAEYER and CARO), 1875, 67.  
preparation of (V. BAEYER), 1880, A., 653.  
constitution of (V. BAEYER), 1879, A., 637.  
and its derivatives, action of ammonia on, and fusion of, with potash (V. BAEYER and BURKHARDT), 1880, A., 657.  
as an indicator (LUCK), 1877, ii., 640; (VIELHABER), 1879, A., 273; (WARDER), 1881, A., 848.
- Phenolphthalein**, derivatives of (V. BAEYER), 1880, A., 653.  
*tetrabromo*-, and its reactions (V. BAEYER), 1880, A., 654.  
*däimido*- (V. BAEYER and BURKHARDT), 1880, A., 657.  
*däimido*-, *tetrabromodäimido*- and *dibromodinitrodäimido*- (V. BAEYER and BURKHARDT), 1878, A., 866.
- Phenolphthalein anhydride.** See Fluoran.
- Phenolphthaleinsulphonic acids** (V. BAEYER), 1880, A., 653.
- Phenolphthalidein** and its derivatives and reactions (V. BAEYER), 1877, i., 307; 1880, A., 655; (V. BAEYER and BURKHARDT), 1880, A., 657.  
bromo-, and *tetrabromo*-, and its derivatives (V. BAEYER), 1880, A., 656.  
*dichloro*- (V. BAEYER), 1880, A., 654.
- Phenolphthalidin** (*dihydroxyphenyl-anthranol*) (V. BAEYER), 1877, i., 309; 1880, A., 656; (EKSTRAND), 1878, A., 676.  
action of ammonia on, and fusion of, with potash (V. BAEYER and BURKHARDT), 1880, A., 657.  
chloride. See Phenolphthalidein, *dichloro*-.  
*tetrabromo*- (V. BAEYER), 1880, A., 655.  
action of ammonia on (V. BAEYER and BURKHARDT), 1880, A., 657.
- Phenolphthalin** (*dihydroxytriphenyl-methanecarboxylic acid*) (V. BAEYER), 1877, i., 307; 1880, A., 654; (EKSTRAND), 1878, A., 676; (V. PECHMANN), 1882, A., 184.  
action of ammonia on, and fusion of, with potash (V. BAEYER and BURKHARDT), 1880, A., 657.  
anhydride (V. BAEYER), 1882, A., 1096.  
chloride. See *diChloro-o*-triphenyl-methanecarboxylic acid.  
*dichloroanhydride* (V. BAEYER), 1882, A., 1097.  
*tetrabromo*- (V. BAEYER), 1880, A., 655.
- Phenolphthalol** (V. BAEYER), 1880, A., 655.
- Phenol-series**, isomeric change in the (ARMSTRONG), 1875, 520.
- Phenolsulphonic acid** (*sulphophenic acid*) (PRESCOTT), 1873, 284.  
from the mother liquors of corallin (COMMAILLE), 1873, 279.



- Phenol-*o*-sulphonic acid** (HERZIG), 1882, A., 407.  
 constitution of (KÖRNER), 1876, i., 237.  
 transformation of (POST), 1876, i., 388.  
 conversion of, into phenol-*p*-sulphonic acid (POST), 1881, A., 92.  
 action of fused alkalis on (DEGENER), 1880, A., 320.  
 nitrating (STUCKENBERG), 1881, A., 92.
- Phenol-*m*-sulphonic acid** (BARTH and SENHOFER), 1876, ii., 410.  
 constitution of (KÖRNER), 1876, i., 237.
- Phenolsulphonic acids** *m*- and *p*- (SCHRADER), 1875, 1196.
- Phenol-*p*-sulphonic acid**, constitution of (KÖRNER), 1876, i., 237.  
 action of phosphorus pentachloride on (KEKULÉ), 1873, 1239.  
 action of potash on (LINCKE), 1874, 373.  
 position of the sulphonic group in (ARMSTRONG), 1874, 1164.
- p*-Phenolsulphonic acid**, and *d*-nitro- and its acid potassium salt (BRUNNE-MANN), 1880, A., 808.
- Phenolsulphonic acids**,  $\gamma$ - and  $\delta$ -*o*-chloro-, and their salts (KRAMERS), 1875, 157.
- Phenol-2-sulphonic acid**, 4-amido- (BENNEWITZ), 1874, 374; (POST), 1881, A., 92.  
 anilide of (POST and HOLST), 1880, A., 642.
- 6:4-iodonitro- and 6:4-bromonitro- (POST and BRACKEBUSCH), 1874, 476.
- 4-nitro- (POST), 1873, 173, 903; (KÖRNER), 1873, 757; (STUCKENBERG), 1877, ii., 888.  
 action of bromine and iodine on (POST), 1881, A., 92.  
 introduction of bromine and iodine into (BRACKEBUSCH), 1881, A., 93.  
 potassium salt of, crystalline form of (PANEbianco), 1880, A., 106.
- Phenol-4-sulphonic acid**, 2-amido- (POST), 1881, A., 92.  
 anilide of (POST and HOLST), 1880, A., 642.
- 2:6-chloronitro- (ARMSTRONG and PREVOST), 1874, 804.
- 2-nitro- (KÖRNER), 1873, 757; (v. ORLOWSKY), 1876, ii., 62.
- Phenol-6-sulphonic acid**, 2:4-*di*bromo-, and its salts (v. SCHMIDT), 1878, A., 725.
- Phenolsulphonic acids** which do not contain the methyl-group, action of nitrosodimethylaniline hydrochloride on (STEBBINS), 1881, A., 161.  
 substituted (POST and BRACKEBUSCH), 1874, 475.  
 amido-, proof of the identity and isomerism of the various (BRACKEBUSCH), 1881, A., 92.  
 bromonitro- (ARMSTRONG and BROWN), 1874, 1164.
- Phenol-*p*-sulphonic anhydride** (SCHIFF), 1876, i., 260.
- Phenoltricarboxylic acid**. See Hydr-oxytrimesic acid.
- Phenol-2:4:6-(?)trisulphonic acid** (SENHOFER; ANNAHEIM), 1874, 265.
- Phenomena**, chemical. See Affinity.
- Phenoquinone** (WICHELHAUS), 1873, 172; (HESSE), 1880, A., 318.  
 formula of (NIETZKI), 1880, A., 247.  
*hexabromo*- (BENEDIKT), 1880, A., 246.
- Phenoxide**, aluminium (GLADSTONE and TRIBE), 1881, T., 9.  
 action of heat on (GLADSTONE and TRIBE), 1882, T., 5.  
 ammonium, new colour reactions of (COTTON), 1875, 917.  
 potassium, action of chloroform on (GUARESCHI), 1874, 259.  
 sodium, action of chloroform on (REIMER and TIEMANN), 1876, ii., 632.  
 formation of *p*-hydroxybenzoic acid from (HASSE), 1878, A., 416; (OST), 1880, A., 43.
- Phenoxy-acetamide**, and -acetanilide (FRITZSCHE), 1880, A., 319.
- Phenoxyacetic acid**, and its salts (FRITZSCHE), 1879, A., 322; 1880, A., 318; (GIACOSA), 1879, A., 929.  
 bromo- (FRITZSCHE), 1880, A., 320.  
*o*-nitro-, behaviour of, with reducing agents (THATE), 1882, A., 849.  
*mono*- and *di*-nitro- (FRITZSCHE), 1879, A., 322; 1880, A., 319.
- Phenoxyaceto-nitrile** and -thiamide (FRITZSCHE), 1880, A., 319.
- Phenoxyacetophenonecarboxylic acid** (GABRIEL), 1881, A., 733.
- $\alpha$ -Phenoxy-cinnamic acid**, and some of its salts (OGIALORO-TODARO), 1881, A., 276.
- Phenoxylic acid**. See Phenylglyoxylic acid.
- Phenoxymethylenephthalyl** (GABRIEL), 1881, A., 733.

- Phenoxypropionic acid**, and its salts, and bromo- (SAARBACH), 1879, A., 642; 1880, A., 393.
- Phenyl allyl oxide**, 2:4-dinitro- (WILLGERODT), 1879, A., 717.
- Phenyl amido-** and brom-ethyl oxides, *o*-, *m*-, and *p*-nitro- (WEDDIGE), 1881, A., 1137.
- Phenyl benzyl ketone**. See Deoxybenzoin.
- Phenyl benzyl oxide** (STAEDEL), 1881, A., 723.
- Phenyl, mono-, di-, and tri-chlorotolyl ketones** (THÖRNER), 1876, ii., 197; 1877, i., 464; 1878, A., 67.
- Phenyl *p*-cymyl ketone** (KOLLARITS and MERZ), 1873, 1036.
- Phenyl ether**. See Diphenylic oxide.
- Phenyl ethyl ketone**. See Propiophenone.
- Phenyl ethyl disulphoxide**. See Ethylic benzenethiosulphonate.
- Phenyl *p*-ethylphenyl ketone** (*ethylbenzophenone*) (SÖLLSCHER), 1882, A., 1293.
- Phenyl glyceryl oxide**, 2:4-dinitro- (WILLGERODT), 1879, A., 717.
- Phenyl mercaptan** (*thiophenol*; *phenyl sulphhydrate*) (FRIEDEL and CRAFTS), 1878, A., 670.  
preparation of (SCHILLER and OTTO), 1877, i., 306.  
preparation of, from benzenesulphinic acid and from diphenylic disulphide (OTTO), 1877, ii., 749.  
action of chlorosulphonic acid on (BECKURTS and OTTO), 1879, A., 229.  
action of sulphur trioxide on (SCHILLER and OTTO), 1877, i., 463.  
action of sulphuric acid on (OTTO), 1880, A., 810.  
*o*-amido- (V. HOFMANN), 1880, A., 386, 886.  
*p*-bromo- (BAUMANN and PREUSSE), 1879, A., 803; 1882, A., 757.  
3:6-chloronitro- (BEILSTEIN and KURBATOFF), 1879, A., 231.  
4:2-chloronitro- (BEILSTEIN and KURBATOFF), 1878, A., 139.  
2:4-dinitro- (WILLGERODT), 1878, A., 141.
- Phenyl dimercaptan**, *m*-chloramido-. See Chloramidodithiophenol.
- Phenyl mercaptans**, amido-, from nitrobenzenesulphonic acids (V. HOFMANN), 1880, A., 389.
- Phenyl methyl ketone**. See Acetophenone.
- Phenyl methyl oxide**. See Anisole.
- Phenyl  $\alpha$ -naphthyl ketone**, formed by the action of benzoic chloride on naphthalene (GRUCAREVIĆ and MERZ), 1873, 1233.  
incomplete reduction of (LEHSE), 1880, A., 478.
- Phenyl naphthyl ketones** (KOLLARITS and MERZ), 1873, 1035.
- Phenyl nitro-*p*-tolyl ketone**, nitro-, formation of (PLASCUDA and ZINCKE), 1875, 69.
- Phenyl propyl ketone** (POPOFF), 1873, 1037; (SCHMIDT and FIEBERG), 1874, 75.  
preparation of (BURCKER), 1882, A., 612.  
oxidation of (POPOFF), 1873, 1037.
- Phenyl styryl ketone**. See Benzyli-deneacetophenone.
- Phenyl tetramethylphenyl ketone** (FRIEDEL, CRAFTS, and ADOR), 1879, A., 713.
- Phenyl *o*-tolyl ketone**, action of heated lead oxide on (BEHR and VAN DORP), 1873, 1135.
- Phenyl *p*-tolyl ketone** and its derivatives (KOLLARITS and MERZ), 1873, 1035; (PLASCUDA and ZINCKE), 1875, 69; (THÖRNER), 1876, ii., 197; 1877, i., 464; 1878, A., 67; (THÖRNER and ZINCKE), 1878, A., 223.  
*mono*-, *di*- and *tri*-nitro-, formation of (PLASCUDA and ZINCKE), 1875, 69.
- Phenyl *m*-xylyl ketone** (*dimethylbenzophenone*) (SÖLLSCHER), 1882, A., 1292.
- Phenylacetamide** ( *$\alpha$ -toluoylamide*) (BERNTHSEN), 1877, i., 619; 1880, A., 650; (REIMER), 1881, A., 43.  
thio- (BERNTHSEN), 1877, i., 616; 1878, A., 585.  
action of ethylic bromide, methylic iodide, and benzaldehyde on (BERNTHSEN), 1878, A., 791.
- Phenylacetamidine** and its hyposulphite (BERNTHSEN), 1876, i., 607.
- Phenylacetic acid** ( *$\alpha$ -toluic acid*), and its derivatives (GABRIEL), 1882, A., 1070.  
preparation of (MANN), 1881, A., 1034.  
preparation of, from benzaldehyde (SPIEGEL), 1881, A., 277.  
action of bromine on, at high temperatures (REIMER), 1881, A., 47.  
action of sodium acetate on a mixture of phthalic anhydride and (GABRIEL and MICHAEL), 1878, A., 735.  
derivatives of (COLOMBO and SPICA), 1875, 894; (BERNTHSEN), 1875, 1025; (BEDSON), 1880, T., 90.

- Phenylacetic acid**, potassium salt of, electrolysis of (SLAWIK), 1875, 58.  
 physiological relations of phenylpropionic acids and (E. and H. SAL-KOWSKI), 1879, A., 662.  
 4-amido- and *o*-bromo- (BEDSON), 1880, T., 92.  
*p*-bromo- (JACKSON and LOWERY), 1878, A., 64; (BEDSON), 1880, T., 94.  
*di*bromo- (BEDSON), 1880, T., 96.  
 4:2- and 4:3-bromamido-, and their salts (BEDSON), 1878, A., 70; 1880, T., 100.  
 4:2- and 4:3-bromonitro- (BEDSON), 1877, ii., 482.  
*p*-chloro- (JACKSON and FIELD), 1881, A., 803.  
*p*-iodo- (MABERY and JACKSON), 1878, A., 422.  
*o*- and *p*-nitro- (BEDSON), 1880, T., 91.  
*p*-nitro-, and its salts (MAXWELL), 1880, A., 119.  
 preparation of (GABRIEL and MEYER), 1882, A., 188.  
 2:4-*d*initro- and 2:4-nitramido- (GABRIEL and MEYER), 1881, A., 729.  
**Phenylacetimidothioethyl ether** (BERNTSEN), 1879, A., 922.  
**Phenyl- $\alpha$ -acetophthalide** (STREIFF), 1881, A., 176.  
**Phenylacetone**. See Benzyl methyl ketone.  
**Phenylacetoneitrile** (*benzyl cyanide*) (V. HOFMANN), 1875, 170.  
 preparation of, and action of zinc ethyl on (FRANKLAND and TOMPKINS), 1880, T., 566.  
 action of bromine on, at high temperatures (REIMER), 1881, A., 47; 1882, A., 169.  
*p*-amido-, and its derivatives (GABRIEL), 1882, A., 1070.  
 $\omega$ -bromo- (REIMER), 1882, A., 170.  
*p*-chloro- (JACKSON and FIELD), 1881, A., 803.  
*p*-iodo- (MABERY and JACKSON), 1878, A., 422.  
**Phenylacetothiamide**. See Phenylacetamide, thio-.  
**Phenylacetropine hydrochloride** (LADENBURG), 1882, A., 984.  
**Phenylacetyl-**. See Acetylphenyl-.  
**Phenylacetylene** (*acetenylbenzene*), action of sodium and carbonic anhydride on (PATERNO), 1873, 636.  
 action of sulphuric acid on (FRIEDEL and BALSOWN), 1881, A., 279.  
**Phenylacetylene** (*acetenylbenzene*), and its derivatives, synthesis by means of (V. BAEYER and LANDSBERG), 1882, A., 622, 972.  
*o*-amido-, and its derivatives (V. BAEYER and LANDSBERG), 1882, A., 623; (MÜLLER), 1882, A., 844.  
*o*-nitro-, and ethylic acetoacetate, action of potassium ferri cyanide on the copper compounds of (V. BAEYER and LANDSBERG), 1882, A., 972.  
*o*- and *p*-nitro- (MÜLLER), 1882, A., 840.  
*p*-nitro- (DREWSSEN), 1882, A., 847.  
 $\alpha$ -Phenylacrylic acid. See Atropic acid.  
 $\beta$ -Phenylacrylic acid. See Cinnamic acid.  
**Phenylallyl**. See Allylbenzene.  
**Phenylamido-**. See also Anilido-.  
**Phenylamidoacetamide** (TIEMANN and FRIEDLÄNDER), 1882, A., 56.  
**Phenylamidoacetic acid** and its salts (STÖCKENIUS), 1879, A., 322; (TIEMANN and FRIEDLÄNDER), 1880, A., 473; 1882, A., 56; (PLÜCHL), 1881, A., 168.  
 action of phosphorus pentachloride on (STÖCKENIUS), 1879, A., 322.  
 See also Anilidoacetic acid.  
**Phenylamidoacetoneitrile** (TIEMANN and FRIEDLÄNDER), 1882, A., 56.  
**Phenylamidoazobenzene**. See Benzene-azodiphenylamine under Azo.  
**Phenyl- $\alpha$ -amidobutyric acid** (DUVILLIER), 1881, A., 87.  
 $\beta$ -Phenylamidoethoxynaphthalene ( *$\beta$ -naphthylmethyl ether*) (KOELLE), 1881, A., 178.  
**Phenylamidomethenylamidophenyl mercaptan** (*anilidothiocarbimide*) (V. HOFMANN), 1879, A., 806; 1880, A., 388.  
**Phenylamine**. See Aniline.  
**Phenylisoamylamine**. See *iso*Amylbenzene, amido-.  
**Phenylangelic acid** (PERKIN), 1877, i., 393; 1879, T., 136.  
**Phenylaniline**. See Diphenylamine.  
**Phenylanthracene** and its derivatives (V. BAEYER and SCHILLINGER), 1880, A., 652.  
**Phenylanthranol** (V. BAEYER and SCHILLINGER), 1880, A., 657.  
 $\alpha$ -*d*ichloro- (V. BAEYER), 1880, A., 656.  
**Phenylarsine dibromide** (MICHAELIS), 1877, ii., 452.  
*d*ichloride (MICHAELIS), 1876, i., 610; 1877, i., 311; (LA COSTE and MICHAELIS), 1879, A., 161.

- Phenylarsine tetrachloride** (MICHAELIS, 1877, i., 311; ii., 452.  
oxychloride and oxide (MICHAELIS), 1877, ii., 452.  
diiodide (MICHAELIS and SCHULTE), 1881, A., 723.
- Phenylarsinic acid.** See Benzencarsonic acid.
- Phenylazoacetoacetic acid** (*azobenzene-acetoncarboic acid*) (MEYER), 1878, A., 396; (ZÜBLIN), 1878, A., 879.
- Phenylazo-**. See also Benzeneazo- and Azobenzene- under Azo-.
- Phenylbenzamidine** (*benzoylphenyl-aminidinc*) thiocyanate (BERNTSEN), 1878, A., 790.
- Phenylbenzenethiazide.** See Benzene-sulphonic acid, phenylhydrazide of.
- Phenylbenzoic acid.** See Diphenyl-o-carboxylic acid.
- "Phenylbenzoic acid, o-amido-, internal anhydride of"** (SUIDA), 1880, A., 246.
- p-Phenylbenzophenone** (GOLD-SCHMIEDT), 1882, A., 202.
- Phenylbenzoyl-**. See Benzoylphenyl-.
- Phenylbenzoylbenzoylamide.** See Dibenzanilide.
- Phenylbenzylamidodiphenylmethane** (MELDOLA), 1882, T., 200.
- Phenylbenzyltrimethylammonium chloride** (MICHLER and GRADMAN), 1878, A., 299.
- Phenylbenzyl acetate** (PERKIN and HODGKINSON), 1880, T., 724.  
preparation of, and the action of sodium on (HODGKINSON), 1880, T., 485.
- Phenylbenzylidenediamine** (BERNTSEN and SZYMANSKI), 1880, A., 639.
- Phenylbenzylketone-o-carboxylic acid** (*o-deoxybenzoiccarboxylic acid*) (GABRIEL and MICHAEL), 1878, A., 735.
- "Phenylbetaine"** and its ethochloride and hydrochloride (ZIMMERMANN), 1880, A., 162.
- Phenylbiuret** (WEITH), 1878, A., 141.
- Phenylboric acid and its salts** (MICHAELIS and BECKER), 1880, A., 396; 1882, A., 731.
- Phenylboric dichloride and its derivatives** (MICHAELIS and BECKER), 1880, A., 395; 1882, A., 731.  
*tetrachloride* (MICHAELIS and BECKER), 1880, A., 396.  
oxide (MICHAELIS and BECKER), 1882, A., 732.
- Phenylbromacetoneitrile** (REIMER), 1882, A., 170.
- Phenylbromethyl.** See  $\alpha$ -Bromethylbenzene.
- Phenylbromophenylthiocarbamide.** See p-Bromodiphenylthiocarbamide.
- Phenylbutane.** See Butylbenzene.
- Phenylbutinene** (*phenylethylacetylene*) (MORGAN), 1876, i., 162.
- Phenylisobutylamine.** See isoButylbenzene, amido-.
- Phenylbutylene** (*butenylbenzene*), synthesis of (ARONHEIM), 1873, 499; 1874, 689.
- $\alpha$ -Phenylbutylene** (RADZISZEWSKI), 1876, i., 915.
- $\beta$ -Phenylbutylene and its dibromide** (PERKIN), 1877, ii., 667; 1879, T., 138.  
bromo-, and its dibromide (PERKIN), 1879, T., 139.
- Phenylbutylenic glycol** (BURCKER), 1882, A., 730.
- $\alpha$ -Phenylbutylic alcohol** (SCHMIDT and FIEBERG), 1874, 75.
- Phenyl-tert.-butylic alcohol** (POPOFF), 1876, i., 695.
- Phenylbutylic chloride, formation of** (ENGLER and BETHEGE), 1875, 65.
- Phenylisobutyric acid** (*benzylmethylacetic acid*) (CONRAD), 1878, A., 732; (CONRAD and BISCHOFF), 1880, A., 628.
- Phenylbutyrolactone** (v. PECHMANN), 1882, A., 1074.
- Phenylcacodylic acid.** See Diphenylarsinic acid.
- Phenylcarbamide, formation of** (STEINER), 1875, 165, 882.
- "Phenylcarbamidol."** See s-Diphenylcarbamide.
- Phenylcarbaminethioic acid.** See Phenylthiocarbamic acid.
- Phenylcarbylamine dichloride** (*isocyanophenyl chloride*) (SELL and ZIEROLD), 1875, 270; (v. HOFMANN), 1879, A., 805.  
peculiar formation of (ČECH and SCHWEBEL), 1878, A., 216.  
p-bromo- (DENNSTEDT), 1880, A., 634.
- Phenylchloracetamide, action of ammonia on, and constitution of the hydroxy-derivative of** (TOMMASI), 1874, 623.
- Phenylcinnamic acid** (OGLIALORO-TODARO), 1879, A., 640.
- Phenylcoumarin, synthesis of, and action of sodium amalgam on** (OGLIALORO-TODARO), 1880, A., 164.
- Phenylcrotonic acid** ( *$\alpha$ -methylcinnamic acid; phenylmethylacrylic acid*) (PERKIN), 1877, i., 391; 1879, T., 137.
- Phenylisocrotonic acid** ( *$\beta\gamma$ -phenylcrotonic acid*) (PERKIN), 1877, i., 395.



- Phenylcumylcarbamide (RAAB), 1876, i., 398.
- Phenyleyanamide (FEUERLEIN), 1880, A., 44.  
preparation of, from phenylthiocarbamide (RATHKE), 1879, A., 804.  
action of acetamide on (BERGER), 1881, A., 810.
- Phenyleystein (BAUMANN), 1882, A., 1282.  
bromo- (BAUMANN and PREUSSE), 1882, A., 756.
- Phenylidibenzamide. See Dibenzanilide.
- Phenyl-diethylarsine (MICHAELIS), 1877, ii., 452.
- Phenyl-diethylazonium ferrocyanide (FISCHER), 1878, A., 408.
- Phenyl-diethylphosphine (ANANOFF), 1875, 1203.
- Phenyl-diethyltetrazone (FISCHER and EHRHARDT), 1880, A., 243.
- Phenyl-diguanide and its salts (BAMBERGER), 1881, A., 44.
- Phenyl-dihydroanthracene (v. BAEYER), 1880, A., 652.
- Phenyl-dimethyl-. See also Xyl-yl.
- Phenyl-dimethylarsine (MICHAELIS and LINK), 1882, A., 305.
- Phenyl-dimethylcarbamide (MICHLER and ESCHERICH), 1879, A., 934.
- Phenyl-dimethylethylammonium ferrocyanide (FISCHER), 1878, A., 408.
- Phenyl-dimethylglycocine. See "Phenylbetaine."
- Phenyl-dimethylphosphine (ANANOFF), 1875, 1204.  
behaviour of, with ethylenic bromide (GLEICHMANN), 1882, A., 958.
- Phenyl-dimethylphosphonium bromide, ethobromide of (GLEICHMANN), 1882, A., 958.
- Phenyl-diphosphorusulphocarbonic acid. See Phenylphosphine-trithiocarboxylic anhydride.
- Phenyl-ditolylguanidine (WILL), 1881, A., 906.  
 $\beta$ -dicyno- (LANDGREEB), 1878, A., 216; 1879, A., 53.
- Phenyl-ditolylmethane (THÖRNER and ZINCKE), 1878, A., 425.  
*tri-p*-amido- (*diortholeucaniline*) and its salts (FISCHER), 1882, A., 833.
- Phenyl-durycarbonyl. See Phenyl tetramethylphenyl ketone.
- m*-Phenylene diphenyl diketone. See *iso*Phthalophenone.
- Phenylene oxide, *di*iodo-. See Diphenylenequinone, *tetra*iodo-.
- Phenyleneacetamidine (HÜBNER), 1882, A., 180.  
bromo- (REMMERS), 1874, 696.
- Phenyleneanisaldehydine and phenylenebenzaldehydine and its salts (LADENBURG and ENGELBRECHT), 1879, A., 234.
- o*-Phenylene-carbamide (RUDOLPH), 1879, A., 922.
- m*-Phenylene-carbamide (MICHLER and ZIMMERMANN), 1882, A., 182.
- p*-Phenylene-carbamide (BENDIX), 1879, A., 314.
- p*-Phenylenediacetic acid (KLIPPET), 1877, i., 468.
- o*-Phenylenediamine (*diamidobenzene*) (ZINCKE and SENTENIS), 1873, 640.  
formation of, by distilling 3:4-*di*-amidobenzoic acid (SALKOWSKI), 1875, 72.  
action of ferric chloride on (RUDOLPH), 1880, A., 162.
- 4-chloro- (BEILSTEIN and KURBATOFF), 1875, 1037.
- 3:5-*d*-nitro- (NORTON and ELLIOTT), 1878, A., 417.
- m*-Phenylenediamine, occurrence of, as a bye-product in the manufacture of aniline (v. HOFMANN), 1874, 1096.  
preparation of (HÜBNER and RETSCHY), 1873, 1146.  
derivatives of (BARBAGLIA), 1875, 273; (RUHEMANN), 1882, A., 391.
- 4-chloro-, formation of (BEILSTEIN and KURBATOFF), 1879, A., 144.
- 5:2-chloronitro- (BEILSTEIN and KURBATOFF), 1879, A., 310.
- nitro-, formation of (BARBAGLIA), 1875, 273.
- 5:2-bromonitro- (KÖRNER), 1876, i., 225.
- p*-Phenylenediamine (ZINCKE and SENTENIS), 1873, 167; (NIETZKI), 1878, A., 792; (KRAUSE), 1879, A., 462; (HÜBNER), 1881, A., 1130.  
reactions of (KRAUSE), 1876, ii., 638.  
action of ethylic chloracetate on (ZIMMERMANN), 1882, A., 957.  
aniline-brown obtained by the action of nitric acid on (LAUTH), 1876, ii., 520.  
colouring matter containing sulphur from (KOCH), 1880, A., 110.  
hydrochloride (HÜBNER), 1881, A., 1130.  
action of bleaching powder on (KRAUSE), 1879, A., 462.
- 5:2-bromonitro- (KÖRNER), 1876, i., 225.
- Phenylenediamines, *o*-, *m*-, and *p*-, constitution of (WÜRSTER and AMBÜHL), 1874, 588; (KÖRNER), 1876, i., 234.  
derivatives of (WUNDT), 1878, A., 667.

- Phenylenediaminesulphonic acids**, *o*- and *m*-, and their salts (POST and HARDTUNG), 1880, A., 394.
- Phenylenediaminesulphonic acids**, *mono*- and *di*-bromo- (LIMPRICHT), 1878, A., 497.
- Phenylenedicarbamide** (WARDER), 1876, i., 400.
- Phenylenediglycollic acid**. See **Phenylenedioxyacetic acid**.
- Phenylenedimethyldiamine**, oxidation of a mixture of dimethylaniline and (BINDSCHEDLER), 1880, A., 391.
- p*-Phenylenedimethyldiamine** (*amido-dimethylaniline*) (WURSTER), 1879, A., 626.  
action of bromine on (WURSTER and SENDTNER), 1880, A., 110.  
action of carbonyl chloride on (MICHLER and ZIMMERMANN), 1882, A., 182.  
action of ethylic oxalate on (SENDTNER), 1879, A., 627.  
colouring matters obtained by the oxidation of (WURSTER), 1880, A., 111.  
colouring matter containing sulphur derived from (KOCH), 1879, A., 628.  
derivatives of (WURSTER and SENDTNER), 1880, A., 110.
- p*-Phenylenedimethyldiaminecarb-amides** (BINDER), 1879, A., 627.
- p*-Phenylenedimethyldiamineoxalic acid** (SENDTNER), 1879, A., 627.
- Phenylenedimethyldiaminesulphonic acid** (MICHLER and WALDER), 1882, A., 176.
- p*-Phenylenedimethyldiaminethiocarbamide** (BAUR), 1879, A., 628.
- m*-Phenylenedi- $\beta$ -naphthyldiamine** (RUHEMANN), 1882, A., 391.
- Phenylenedioxyacetic acid** (*phenylenediglycollic acid*), and *di*bromo- (GABRIEL), 1880, A., 33.
- Phenylenedisulphuric acid** (BAUMANN), 1879, A., 149.
- Phenylenefurfuraldehydine** and its salts (LADENBURG and ENGELBRECHT), 1879, A., 235.
- Phenylenenaphthylene oxide**, and its quinone (GRAEBE and KNECHT), 1880, A., 664.
- Phenylenenaphthylene oxide**, *di*-bromo-, *dichloro*-, and *dinitro*- (*v. ARX*), 1881, A., 282.
- Phenylenenaphthylene oxides**,  $\alpha$ - and  $\beta$ - (*v. ARX*), 1881, A., 282.
- Phenylenenaphthyleneamine**. See **Phenylnaphthylcarbazole**.
- m*-Phenylenesoxamide** (KLUSEMANN), 1875, 269.
- Phenylenepropenyldiamine** (WUNDT), 1878, A., 668.
- m*-Phenylenetetramethyldiamine** and its salts (WURSTER and MORLEY), 1880, A., 111.  
action of bromacetophenone on (STAEDEL and SIEFERMANN), 1880, A., 639.
- p*-Phenylenetetramethyldiamine** (WURSTER), 1879, A., 627.  
action of oxidising agents on (WURSTER and SCHOBIG), 1880, A., 111.  
colouring matters obtained by the oxidation of (WURSTER), 1880, A., 111.
- Phenylenetetramethyldiamines**, *m*- and *p*-, ferrocyanides of (WURSTER and ROSE), 1880, A., 99.
- m*-Phenylenedithioglycollic acid** (GABRIEL), 1880, A., 33.
- m*-Phenylenetrimethyldiamine nitrosamine**, trinitro- (WURSTER and MORLEY), 1880, A., 111.
- p*-Phenylenetrimethyldiamine** and its nitrosamine (WURSTER and SCHOBIG), 1880, A., 111.  
nitro-, and its nitrosamine (WURSTER and SCHOBIG), 1880, A., 111.
- Phenylenic diethylic dicarbonate** (BENDER), 1881, A., 48.
- Phenylethane**,  $\omega$ -amido-. See  $\omega$ -**Phenylethylamine**.
- Phenylethyl-**. See also **Ethylphenyl-**.
- Phenylethyl methyl ketone** (*benzylacetone*) (WISLICENUS and EHRLICH), 1876, i., 369; (JACKSON), 1881, A., 734, 742.
- Phenylethylacetylene**. See **Phenylbutinene**.
- $\omega$ -Phenylethylamine** ( $\omega$ -*amidoethylbenzene*) (BERNTSEN), 1875, 1025; 1877, i., 617; (SPICA), 1880, A., 241.  
hydrochloride, decomposition of (FILETI and PICCINI), 1879, A., 922.
- Phenylethylammonium ethyl sulphate** (CLAËSSON and LUNDAHL), 1881, A., 242.
- Phenylethylcarbamide** (SPICA), 1880, A., 242.  
chloride, action of diphenylamine on (KAUFMANN), 1882, A., 183.
- Phenylethylcarbinol**, etherification of (MENSCHUTKIN), 1882, A., 817.
- Phenylethylcyanamide** (*carbethylphenylimide*) (WEITH), 1876, i., 603.
- Phenylethylene**. See **Styrene**.
- Phenylethylethylidenedichlorochromic acid** (ETARD), 1881, A., 582.

- s*-Phenylethylhydrazine (*hydrazophenylethyl*) (FISCHER and EHRLHARDT), 1878, A., 573; 1880, A., 243.
- as*-Phenylethylhydrazine, ethylbromide of (FISCHER and EHRLHARDT), 1878, A., 573.
- n*-Phenylethyl alcohol. See Benzylcarbinol.
- sec*-Phenylethyl alcohol. See Phenylmethylcarbinol.
- Phenylethyl bromide. See  $\omega$ -Bromethylbenzene.
- Phenylethylketone-*o*-carboxylic acid (*propiophenonecarboxylic acid*) (GABRIEL and MICHAEL), 1878, A., 735.
- Phenylethyloxamide, action of phosphorus pentachloride on (WALLACH), 1881, A., 718.
- Phenylethylpropionic acid. See Phenylvaleric acid.
- Phenylethylsemicarbazide and its nitrosamine (FISCHER), 1878, A., 307.
- Phenylethylsulphone (BECKMANN), 1879, A., 39; (OTTO), 1880, A., 810.
- Phenylethylthiourethane. See Ethylic phenylethyl- $\psi$ -thiocarbamate.
- Phenylethyl-*l*-thiourethane. See Ethylic phenylethyl-*l*-thiocarbamate.
- Phenylflavaniline, and its salts (FISCHER and RUDOLPH), 1882, A., 1067.
- Phenylfumaric acid (BARISCH), 1880, A., 43.
- Phenylglyceric acid (*styceric acid*) (ANSCHÜTZ and KINNICUTT), 1879, A., 644.  
and related compounds (ANSCHÜTZ and KINNICUTT), 1878, A., 981.
- Phenylglycerol (*stycerin*) (GRIMAU), 1873, 1139.
- Phenylglycidic acid, *o*-nitro- (v. BAeyer), 1881, A., 275.  
*p*-nitro- (ERLENMEYER), 1882, A., 191.
- Phenylglycocine. See Anilidoacetic acid.
- Phenylglycollic acid. See Mandelic acid.
- Phenylglycolylhydroxypropylpiperidine (LADENBURG), 1882, A., 1193.
- Phenylglyoxylamide, *m*-amido- (CLAISEN and THOMPSON), 1880, A., 253.  
*m*-nitro- (THOMPSON), 1881, A., 814.
- Phenylglyoxylamides (CLAISEN), 1878, A., 51; 1879, A., 649.
- Phenylglyoxylic acid (*benzoylformic acid*; *formobenzoic acid*) (HÜBNER and v. BUCHKA), 1877, ii., 485; (CLAISEN), 1877, ii., 423, 616; 1879, A., 647; (HUNNIUS), 1878, A., 147; (HUNAEUS and ZINCKE), 1878, A., 224; (THOMPSON), 1881, A., 814; (MEYER and BONER), 1882, A., 196.
- Phenylglyoxylic acid (*benzoylformic acid*; *formobenzoic acid*), new method of preparing (CLAISEN and MORLEY), 1879, A., 322.  
action of nascent hydrocyanic acid on (SPIEGEL), 1881, A., 277.  
test for (CLAISEN), 1880, A., 67.  
*m*-amido- (*m*-isatic acid) (CLAISEN and THOMPSON), 1880, A., 253.
- Phenylguanidine (FEUERLEIN), 1880, A., 44; (LIEBERMANN), 1881, A., 45.
- Phenylguanidoacetic acid (BERGER), 1880, A., 802.
- Phenylhalogenpropionic acids, constitution of (ERLENMEYER), 1880, A., 42.
- Phenylhomocinchonidines (CLAUS and BÄTCKE), 1881, A., 184.
- Phenylhydantoin and -hydantoic acid (SCHWEBEL), 1878, A., 301.
- Phenylhydrazine (KOLBE), 1877, ii., 457; (FISCHER), 1878, A., 302.  
action of diazobenzene on (FISCHER), 1878, A., 305.  
action of ethylic bromide on (FISCHER), 1878, A., 306; (FISCHER and EHRLHARDT), 1878, A., 573; 1880, A., 242.  
action of the halogens and of sulphur on (FISCHER), 1878, A., 310.  
oxidation of, by mercuric oxide (FISCHER and EHRLHARDT), 1880, A., 243.  
conversion of, into diazo-compounds (FISCHER), 1878, A., 305.  
salts of (FISCHER), 1878, A., 304.  
*dicyanide* (FISCHER), 1878, A., 310.  
hydrochloride (FISCHER), 1875, 1035.  
nitrosamine (FISCHER), 1878, A., 304.  
phenyl-carbazate and -thiocarbazate (FISCHER), 1878, A., 307.
- Phenylhydrazine-*o*-carboxylic acid (*hydrazinebenzoic acid*) and anhydride (FISCHER), 1880, A., 647.
- Phenylhydrazinecarboxylic acids (FISCHER and RENOUF), 1882, A., 1068.
- Phenylhydrazine-*p*-sulphonic acid (FISCHER), 1878, A., 303.
- Phenylic acetate, preparation and reactions of (PERKIN and HODGKINSON), 1880, T., 487, 721.  
*trinitro-* (*acetyl picrate*) (TOMMASI and DAVID), 1873, 1238.

- Phenyl alcohol, cyano-**. See Hydroxybenzonitrile.
- benzenesulphonate and its reactions (SCHIAPARELLI), 1881, A., 602.
- benzenethiosulphonate (*benzene disulphoxide*) (PAULY and ORTO), 1877, i., 463; 1878, A., 414; 1879, A., 243.
- measurement of the crystals of (ORTO), 1882, A., 832.
- benzoate (*benzoylphenol ether*) (FISCHER), 1875, 1035.
- preparation of (RASINSKI), 1882, A., 1289.
- derivatives of (HÜBNER), 1882, A., 506.
- o*- and *p*-nitro- (SCHIAPARELLI), 1881, A., 603.
- benzoylthiocarbamate (MIQUEL), 1877, ii., 871.
- bromide. See Benzene, bromo-.
- chloride. See Benzene, chloro-.
- isocyno-*. See Phenylcarbylamine dichloride.
- isocyanate*, *p*- and *bis*-bromo- (DENNSTEDT), 1880, A., 633.
- cyanide. See Benzonitrile.
- isocyanide*. See Phenylcarbylamine.
- cyanurate (v. HOFMANN), 1878, A., 301.
- ethyl sulphide (BECKMANN), 1879, A., 37.
- glycol. See Dihydroxyethylbenzene.
- iodide. See Benzene, iodo-.
- p*-nitrobenzenesulphonate (SCHIAPARELLI), 1881, A., 603.
- phosphanilate (WALLACH and HEYMER), 1876, i., 263.
- phosphenylate (MICHAELIS and KAMMERER), 1876, i., 597.
- sulphate (v. ORLOWSKY), 1875, 875; 1876, ii., 61.
- hydrogen sulphate. See Phenylsulphuric acid.
- potassium sulphate (BAUMANN), 1879, A., 148.
- sulphide. See Diphenyl sulphide.
- thioacetate (MICHLER), 1875, 258, 761.
- thiobenzoate (SCHILLER and OTTO), 1877, i., 468.
- thiocyanate (BILLETER), 1875, 464.
- action of, on aldehyde-ammonia (SCHIFF), 1877, i., 313.
- action of bromine on (PROSKAUER and SELL), 1877, i., 67.
- thio-*o*-formate (GABRIEL), 1877, ii., 311.
- thiophosphenylate (MICHAELIS and KÖHLER), 1876, ii., 525.
- Phenylmeisatin** (SCHIFF), 1882, A., 304.
- Phenylimidobenzylphenylcarbamine-thiethyl**. See Diphenylbenzylethyl- $\psi$ -thiocarbamide.
- Phenylimidodiacetic acid**, aniline salt of (MEYER), 1882, A., 519.
- 2'-Phenylindole** (MÖHLAU), 1881, A., 262.
- Phenyllactic acid**, amido- (DEWAR), 1881, A., 1044.
- Phenyl- $\alpha$ -lactic acid**, synthesis of, from ethylic malonate (CONRAD), 1881, A., 168; 1882, A., 58.
- Phenyl- $\beta$ -lactic acid**, and its salts (FITTIG and KAST), 1881, A., 427.
- $\alpha$ -bromo- (ERLENMEYER), 1880, A., 472.
- $\alpha$ -chloro-*o*-nitro- (v. BAAYER), 1881, A., 275.
- Phenyllactic acids**, constitution of (ERLENMEYER), 1880, A., 42, 471.
- Phenyllactimide** (FITTIG and POSEN), 1880, A., 322.
- Phenylmandelic acid**, and its salts (MEYER and BÖSER), 1882, A., 196.
- Phenylmercapturic acid**, bromo-, and its reactions (BAUMANN and PREUSSE), 1879, A., 803; 1882, A., 757; (BAUMANN), 1882, A., 1282.
- Phenylmercuroammonium chloride**, action of iodine on (RUDOLPH), 1878, A., 422.
- Phenylmethyl-**. See also Methylphenyl-.
- Phenylmethylacrylic acid**. See Phenylcrotonic acid.
- Phenylmethylamidoacetic acid** (*phenylsarcosine*) (TIEMANN and PIEST), 1882, A., 50.
- Phenylmethylamidobenzoic acid** (MICHLER and SARAUW), 1882, A., 183.
- Phenylmethylamidodiphenylmethane** (MELDOLA), 1882, T., 200.
- Phenylmethylbenzene**. See *p*-Methyldiphenyl.
- Phenylmethylcarbamic chloride** (MICHLER and ZIMMERMANN), 1879, A., 935.
- Phenylmethylcarbinol** (*acetophenonic alcohol*; *sec. phenylethyllic alcohol*) and its derivatives (ENGLER and BETHGE), 1875, 65.
- Phenylmethyldiethylphosphonium iodide** (ANANOFF), 1875, 1204.
- as*-**Phenylmethylhydrazine** and its reactions (FISCHER), 1878, A., 311.
- Phenylmethyloxamide** (WALLACH and WEST), 1877, ii., 187.
- Phenyl- $\alpha$ -methylparaconic acid** (FITTIG), 1882, A., 190.
- 2'-Phenyl-4'-methylquinoline**. See Flavoline.
- p*-amido-. See Flavanine.



- Phenylmethylesemicarbazide (FISCHER), 1878, A., 311.
- Phenylmethylthiocarbazine (FISCHER and BESTHORN), 1882, A., 1095.
- Phenylmucamide (KÖTTNITZ), 1873, 164.
- $\beta$ -Phenyl-naphthalene (SMITH and TAKAMATSU), 1881, T., 546.  
from phenylic glycol (BREUER and ZINCKE), 1878, A., 889; 1879, A., 327.  
synthesis of (SMITH), 1880, A., 125, 261.  
colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.
- Phenyl-naphthaquinone and its derivatives (BREUER and ZINCKE), 1879, A., 327; 1880, A., 665.
- Phenyl-naphthaquinones, polymeric (BREUER and ZINCKE), 1880, A., 665.
- Phenyl- $\alpha$ -naphthylamine, tribromo- and dinitro- (STREIFF), 1881, A., 176.
- Phenyl- $\beta$ -naphthylamine (MERZ and WEITH), 1880, A., 813; 1882, A., 179.  
dibromo- (STREIFF), 1880, A., 177.
- Phenyl- $\alpha$ - and - $\beta$ -naphthylamines (STREIFF), 1881, A., 176.
- Phenyl-naphthylcarbazole (*phenylene-naphthylencamine*) and its quinone (GRAEBE and KNECHT), 1880, A., 168, 663.  
oxidation of (GRAEBE and KNECHT), 1880, A., 663.
- Phenyl-naphthylcarbazoline and its iodide (GRAEBE and KNECHT), 1880, A., 663.
- Phenyl- $\alpha$ -naphthylcarbinol (LEHNE), 1880, A., 478.
- Phenyl- $\alpha$ - and - $\beta$ -naphthylthiocarbamides, decomposition of, by hydrochloric acid (MAINZER), 1882, A., 1212.
- Phenyl-*m*- and -*p*-nitranilines, dinitro- (AUSTEN), 1875, 165; 1877, ii., 756.
- Phenyl-*p*-nitraniline, trinitro-. See Picrylnitraniline.
- Phenylloxamethane. See Ethylic phenylloxamate.
- Phenylloxamic acid, *m*-amido- (KLUSEMANN), 1875, 269.
- Phenylloxamide, action of phosphorus pentachloride on (WALLACH), 1881, A., 718.
- Phenylloxanthranol, and the action of benzene on (v. BAeyer and SCHILLINGER), 1880, A., 651.
- Phenylloxethylenecarbamide, dibromo-. See *p*-Bromanilidoacetic acid, bromanilide of.
- $\beta$ -Phenyl-oxyacrylic acid. See Phenylglycidic acid.
- Phenyl-oxy-crotonic acid. See  $\beta$ -Benzoylpropionic acid.
- Phenylparaconic acid (FITTIG), 1882, A., 190.
- Phenylpentenoic acid. See Hydrostyrylacrylic acid.
- Phenylpentinoic acid (*cinnamonylacrylic acid*) and its amide and chloride (PERKIN), 1877, i., 403.
- Phenylphenanthrylcarbinol, phenanthrylic ether of. See Phenanthrenebenzalquin.
- Phenylphenol ether (*hydroxydiphenyl oxide*), bromo- (BÖHMER), 1882, A., 398.
- Phenylphenyl mercaptan (GABRIEL and DEUTSCH), 1880, A., 476.  
*p*-amido-, hydrochloride of (GABRIEL and DAMBERGIS), 1880, A., 890.
- p*-Phenylphenylamidoacetic acid (ZIMMERMANN), 1881, A., 176.
- Phenyl-*m*-phenylenediamine, 3:6-chloronitro- (LAUBENHEIMER), 1878, A., 976.  
2:4-dinitro- (LEYMANN), 1882, A., 1057.
- Phenylphenylthiocarbimide. See Benzylamidophenyl mercaptan.
- Phenylphosphine and its salts (MICHAELIS), 1874, 485; (KÖHLER and MICHAELIS), 1877, ii., 450.  
reactions of (KÖHLER and MICHAELIS), 1877, ii., 450; (MICHAELIS and DITTLER), 1879, A., 528.
- Phenylphosphinetrithiocarboxylic anhydride (MICHAELIS and DITTLER), 1879, A., 528.
- Phenylphosphinic acid. See Phosphenylic acid.
- Phenylphosphonium iodide (KÖHLER and MICHAELIS), 1877, ii., 450.
- Phenylphosphoric acid and chloride (JACOBSEN), 1876, i., 596.
- Phenylphosphoric chloride, *p*-chloro- (KEKULÉ), 1873, 1239.
- Phenylphthalamic acid (*phthalanilic acid*) and its imide (HESSERT), 1878, A., 419.
- Phenylphthalimide, *p*-chloro-, *p*-bromo-, *p*-iodo-, and *m*-nitro- (GABRIEL), 1879, A., 323.
- Phenylpropionic acid (PATERNÒ), 1873, 636.  
*o*-nitro- (v. BAeyer), 1881, A., 275; (MÜLLER), 1882, A., 843.  
action of reducing agents on (ANON.), 1882, A., 1100.  
*p*-nitro-, and its salts (MÜLLER), 1882, A., 843; (DREWSSEN), 1882, A., 847.

**Phenylpropionic acid**, amido-, occurrence of, among the products of decomposition of albuminoid bodies (SCHULZE and BARBIERI), 1882, A., 189.

**$\alpha$ -Phenylpropionic acid** (*hydratropic acid*) (FITTIG and WURSTER), 1879, A., 380.

$\alpha$ -amido-, nitrile, and its salts (TIE-MANN), 1882, A., 57.

**$\beta$ -amido-** (FITTIG and WURSTER), 1879, A., 379.

**$\alpha$ -bromo-** (FITTIG and WURSTER), 1879, A., 379; (FITTIG and KAST), 1881, A., 428.

**$\beta$ -bromo-** (KRAUT and MERLING), 1881, A., 425.

**$\alpha\beta$ -di- and tri-bromo-** (FITTIG and WURSTER), 1879, A., 379.

**$\alpha$ -chloro-** (LADENBURG), 1879, A., 720.

**$\beta$ -chloro-** (SPIEGEL), 1881, A., 277; 1882, A., 520; (KRAUT and MERLING), 1881, A., 425.

**$\beta$ -Phenylpropionic acid** (*benzylacetic acid*; *homotoluic acid*; *hydrocin-namic acid*) (SESEMANN), 1874, 69; (MERZ and WEITH), 1877, ii., 617.

formation of, by means of the pancreas ferment (E. and H. SALKOWSKI), 1879, A., 465.

new synthesis of (SESEMANN), 1875, 73.

action of bromine on (GÖRING), 1878, A., 318.

physiological relations of phenylacetic acid and (E. and H. SALKOWSKI), 1879, A., 662.

**$\alpha$ -amido-** (ERLENMEYER and LIPP), 1882, A., 971.

**$\beta$ -amido-** (FITTIG and POSEN), 1879, A., 378.

**$m$ - and  $p$ -amido-** (GABRIEL and STEUDEMANN), 1882, A., 1073.

**$\beta$ -bromo-** (FITTIG and BINDER), 1879, A., 378.

**$p$ -bromo-** (GÖRING), 1878, A., 318.

**$\alpha$ - and  $\beta$ -dibromo-** (FITTIG and BINDER), 1879, A., 378.

**$\omega$ -tribromo-**, decomposition of (KINNICUTT), 1882, A., 730.

**4:3-bromamido- and  $p$ -bromo- $o$ - and  $m$ -nitro-** (GABRIEL and ZIMMERMANN), 1881, A., 274.

**$\alpha\beta$ -dibromo- $p$ -nitro- and its salts** (DREWSSEN), 1882, A., 846.

**$\beta$ -chloro- and  $\alpha\beta$ -dichloro-** (ERLENMEYER), 1882, A., 191.

**$\alpha\beta$ -dichloro-**, action of alcoholic potash on (JUTZ), 1882, A., 1073.

**$\beta$ -Phenylpropionic acid** (*benzylacetic acid*; *homotoluic acid*; *hydrocin-namic acid*),  $\omega$ -iodo- (*hydriodocinnamic acid*) (FITTIG and BINDER), 1879, A., 378.

**$o$ -nitro-** (GABRIEL and ZIMMERMANN), 1881, A., 274.

**$m$ -nitro-** (GABRIEL and STEUDEMANN), 1882, A., 1073.

**2:4-dinitro-** (GABRIEL and ZIMMERMANN), 1879, A., 640; 1881, A., 274.

**2:4-nitramido-** (GABRIEL and ZIMMERMANN), 1879, A., 640.

**3:4-nitramido-** (GABRIEL and STEUDEMANN), 1882, A., 1073.

**Phenylpropylene.** See Allylbenzene.

**Phenylpropylglycollic acid** (*cuminglycollic acid*) (PLÖCHL), 1882, A., 515.

**Phenylpropylic alcohol** (FITTIG), 1873, 899.

production and properties of (RÜGHEIMER), 1874, 894.

**Phenylpropylic cinnamate** (V. MILLER), 1878, A., 159.

**Phenylpropylidene-dichlorochromic acid and dichromous chloride** (ETARD), 1881, A., 582.

**Phenylpyrogallophthalin.** See Trihydroxydiphenylphthalide.

**Phenylpyrroline** (KÖTTNITZ), 1873, 164; (LICHTENSTEIN), 1881, A., 721.

**$p$ -Phenylquinoline** (LA COSTE), 1882, A., 979.

**Phenylresorcinolphthalin anhydride.** See Dihydroxydiphenylphthalide.

**Phenylsarcosine.** See Phenylmethy-l-amidoacetic acid.

**Phenylsemicarbazide** (FISCHER), 1878, A., 307.

**Phenylsemithiocarbazide** (FISCHER and BESTHORN), 1882, A., 1093.

**Phenylsuccinic acid** (RÜGHEIMER), 1881, A., 599; (SPIEGEL), 1881, A., 1037.

**Phenylsuccinimide.** See Succinophenyl-imide.

**Phenylsulphacetic acid.** See Phenylthioglycollic acid.

**Phenylsulphonacetic acid** (GABRIEL), 1881, A., 716.

**Phenylsulphone.** See Diphenylsulphone.

**Phenylsulphonic acid.** See Benzene-sulphonic acid.

**Phenylsulphuric acid** (SALKOWSKI), 1877, i., 330; (BAUMANN), 1877, i., 467; 1879, A., 148.

**Phenyltetraphosphorus dihydride** (GÜTTER and MICHAELIS), 1878, A., 723.

- Phenylthiocarbamic acid** (WILL), 1882, A., 723.
- Phenyl*l*thiocarbamic acid** and its salts (RATHKE), 1879, A., 54.
- Phenylthiocarbamide** (DE CLERMONT), 1876, ii., 92.
- action of alcoholic ammonia on (FEUERLEIN), 1880, A., 44.
- preparation of phenylcyanamide from (RATHKE), 1879, A., 804.
- bromo- (DENNSTEDT), 1880, A., 634.
- Phenyl*l*thiocarbazic acid** (FISCHER), 1878, A., 308.
- Phenylthiocarbimide** (BERNTSEN), 1878, A., 790; (WILL), 1882, A., 723.
- action of glacial acetic acid on (CLAUS and VÖLTZKOW), 1881, A., 591.
- action of benzoic acid on (LOSANITSCH), 1873, 758.
- action of, on diphenylguanidine (RATHKE), 1879, A., 804.
- action of guanidine carbonate on, in presence of water (BAMBERGER), 1882, A., 395.
- action of gaseous hydrochloric acid on, in presence of alcohol (PINNER and SCHAUMANN), 1881, A., 811.
- action of phosphorus pentachloride on (V. HOFMANN), 1879, A., 805.
- action of sulphuric anhydride on (MAGATTI), 1879, A., 312.
- desulphuration of (WEITH), 1873, 909; 1874, 992.
- compounds of, with acid amides (BAMBERGER), 1882, A., 394.
- amido- (V. HOFMANN), 1880, A., 388.
- bromo- (DENNSTEDT), 1880, A., 633.
- chloro-, and its derivatives (BEILSTEIN and KURBATOFF), 1875, 1200.
- and its hydrochloride (V. HOFMANN), 1879, A., 805; 1880, A., 388.
- methenylamidophenyl mercaptan from (V. HOFMANN), 1880, A., 388.
- chloronitro- (V. HOFMANN), 1880, A., 387.
- Phenylthiocarbimideglycollide** (LIEBERMANN and VÖLTZKOW), 1880, A., 659; (VÖLTZKOW), 1881, A., 43; (MEYER), 1881, A., 1039; (LIEBERMANN), 1881, A., 45; 1882, A., 298.
- Phenylthiocarbazine** and its derivatives (FISCHER and BESTHORN), 1882, A., 1094.
- Phenylthioformamide**. See Formanilide, thio-.
- Phenylthioglycollic acid** (*phenylsulph-acetic acid*) (CLAËSSON), 1876, i., 567.
- $\beta$ -Phenylthiohydantoic acid** (MEYER), 1881, A., 1039.
- Phenylthio- $\psi$ -hydantoin** (MEYER), 1878, A., 295.
- synthesis of (ANDREASCH), 1882, A., 407.
- Phenylthiourethane**. See Ethylic phenylthiocarbamate.
- Phenyl*l*thiourethane**. See Ethylic phenyl*l*thiocarbamate.
- Phenyltoluene**. See Methyl diphenyl.
- Phenyl-*p*-toluidine** (MERZ and WEITH), 1882, A., 179.
- chloronitro- (LAUBENHEIMER), 1878, A., 976.
- Phenyltolyl**. See Methyl diphenyl.
- Phenyltolylacetamidine** (WALLACH), 1877, i., 91.
- Phenyl-*p*-tolylacetic acid** and its derivatives (TANISCH), 1877, ii., 618.
- Phenyl-*p*-tolylcarbamide**, action of aniline and *p*-toluidine on (MERZ and WEITH), 1877, ii., 886.
- Phenyl-*p*-tolylcarbinol** (*phenyltolylhydrol*) (THÖRNER and ZINCKE), 1878, A., 223.
- Phenyltolylene 3:4-diamine**, 2:4-dinitro- (LEYMANN), 1882, A., 1057.
- Phenyl-*p*-tolylethane** (V. BANDROWSKI), 1875, 62.
- Phenyl-*p*-tolylethane** (*p*-methyl dibenzyl) (MANN), 1881, A., 1034.
- Phenyltolylphthalide** (V. PECHMANN), 1882, A., 185.
- Phenyltolyl-pinacone** and - $\alpha$ - and - $\beta$ -pinacolines (THÖRNER and ZINCKE), 1878, A., 223.
- Phenyl-*p*-tolylsulphone** (MICHAEL and ADAIR), 1878, A., 415.
- Phenyl-*o*-tolylthiocarbamide**, decomposition of, by hydrochloric acid (MAINZER), 1882, A., 1213.
- Phenyl-*o*- and -*p*-tolylthiocarbamides** (STAATS), 1880, A., 387.
- Phenyltriethylammonium hydroxybenzoates**, action of heat on (KUPFERBERG), 1878, A., 320.
- Phenyltriethylarsenium iodide** (LA COSTE and MICHAELIS), 1879, A., 162.
- Phenyltriethylphosphonium iodide** (ANANOFF), 1875, 1204.
- Phenyltrimethylammonium bromide**, synthesis of (STAEDEL and SIEFERMANN), 1881, A., 722.
- methyl sulphate (CLAËSSON and LUNDVALL), 1881, A., 241.
- Phenylurethane sulphide** (LIEBERMANN and NATANSON), 1881, A., 45.

- $\delta$ -Phenylvaleric acid** (v. BAEYER and JACKSON), 1880, A., 407.
- $\beta$ -Phenylisovaleric acid** ( *$\beta$ -phenyl- $\alpha$ -ethylpropionic acid*) (v. BAEYER and JACKSON), 1880, A., 406.
- Phenylvinyl-**. See Styryl-.
- Phenylxanthamide**. See *Ethylie phenyl- $\psi$ -thiocarbamate*.
- Phenylxylene**. See *s*-Diphenylethane.
- Phenylxylylketone-*o*-carboxylic acids** (*xylene-phthalic acids*) (MEIER), 1882, A., 848.
- Philadelphite**, a new mineral species (LEWIS), 1882, A., 152.
- Philippium** (DELAFontaine), 1879, A., 116; (BROWN), 1879, A., 204; (ROSCOE), 1882, T., 277.  
spectrum of (SORET), 1880, A., 7; (ROSCOE), 1882, T., 282.
- Phillipsite** (BOŘICKÝ), 1874, 236.  
and its relations to harmotome and desmine (FRESENIUS), 1881, A., 695.  
crystalline form and twin formations of (STRENG), 1875, 1244.  
from Puy-de-Dôme (GONNARD), 1877, ii., 283.  
from Salesi in Bohemia (v. ZEPHAROVICH), 1881, A., 995.  
from Sirgwitz, twin-formation of (TRIPPKE), 1879, A., 515.
- Phlobaphen** (ETTI), 1878, A., 797; (BÖTTINGER), 1880, A., 650.  
action of hydrochloric or hydriodic acid on (BÖTTINGER), 1880, A., 650.
- Phlobaphens** (PROCTER), 1879, A., 979.
- Phlogopite** (BERWERTH), 1878, A., 478; (TSCHERMAK), 1878, A., 711; 1880, A., 533.  
See also Mica.
- Phlorein**, composition of (BENEDIKT), 1874, 894; 1876, i., 250.
- Phloretic acid**. See *p*-Hydroxy- $\alpha$ -phenylpropionic acid.
- Phloretin** and its derivatives (SCHIFF), 1875, 66.  
and phloridzin (LOEWE), 1876, i., 710.
- Phloridzin** (*phlorizin*), action of heat on (SCHIFF), 1881, A., 439.
- Phlorobromine** (BENEDIKT), 1877, ii., 891; 1878, A., 499.
- Phloroglucide**. See Phloroglucinol anhydride.
- Phloroglucinol** (BENEDIKT), 1874, 894; (ARATA), 1878, A., 986; (TEDESCHI), 1879, A., 934; (FISCHER), 1881, A., 1149.  
oxidation of resorcinol to, and synthesis of (BARTH and SCHREDER), 1879, A., 633.
- Phloroglucinol**, absorption of oxygen by an alkaline solution of (WEVL and GOTH), 1882, A., 401.  
action of bromine on (BENEDIKT), 1877, ii., 891; 1878, A., 499.  
as a test for woolly fibre (WIESNER), 1878, A., 612.  
and its new derivatives (WESELSKY), 1876, i., 249.  
detection of (WESELSKY), 1876, i., 964; (PROCTER), 1879, A., 979.  
*tribromo-*, action of nitric acid on (BENEDIKT), 1877, ii., 193.  
*trinitro-*, and its salts, and *trinitroso-* (BENEDIKT), 1879, A., 57.
- Phloroglucinol anhydride** (*phloroglucide*) (PICCARD), 1874, 1166; (SCHIFF), 1875, 66; (HLASIWETZ), 1875, 256.
- Phloroglucinol-*p*-azobenzenesulphonic acid**. See *Trihydroxybenzeneazobenzenesulphonic acid* under Azo.
- Phloroglucinol-phthalein** and -phthalin (LINK), 1881, A., 95.
- Phloroglucinolsulphonic acid** (SCHIFF), 1873, 506; 1876, i., 262.
- Phlorone**. See *p*-Xylo-2:5-quinone.
- Phlorose**. See Dextrose under Carbohydrates.
- Phonolite** (v. ECKENBRECHER), 1881, A., 1013; (FÖHR), 1882, A., 587.  
changes produced by weathering of (v. ECKENBRECHER), 1881, A., 700.
- Phonolites** of the Velay and the Westerwald (EMMONS), 1875, 621.  
mineralogical constitution and classification of (MÖHL), 1874, 560.  
additive products of (CLAISEN), 1876, i., 896.  
behaviour of, to reducing agents (CLAISEN), 1876, i., 895.
- Phorone** (CLAISEN), 1875, 161.  
from glycerol (SCHULZE), 1882, A., 613.  
from nitrosotriacetoneamine (HEINTZ), 1877, ii., 583.  
constitution of (CLAISEN and CLAPARÈDE), 1881, A., 422.  
action of dehydrating agents on (CLAISEN), 1876, i., 897.  
action of phosphorus *pentachloride* on (JACOBSEN), 1877, ii., 447.  
oxidation of (CLAISEN), 1876, i., 895; (PINNER), 1882, A., 943.  
isomeride of (DE MONTGOLFIER), 1879, A., 726.
- Phoronic acid** (DE MONTGOLFIER), 1878, A., 898.  
and its derivatives (PINNER), 1881, A., 797.
- Phosene**. See Synanthrene.



- Phosgene.** See Carbonyl chloride under Carbon.
- Phosgenite.** See Cromfordite.
- Phospham** (SALZMANN), 1874, 870.
- Phosphanilidosulphonic acid and chloride** (LAAR), 1880, A., 321.
- Phosphates.** See Phosphoric acid under Phosphorus.
- Phosphatic minerals, decomposition of** (PILTER), 1879, A., 839.
- Phosphenylio acid** (*benzenephosphonic acid*) and its derivatives (MICHAELIS), 1874, 169; (MICHAELIS and MATHIAS), 1875, 170; (BENZINGER), 1875, 1205; (MICHAELIS and BENZINGER), 1876, i., 598; 1878, A., 57.
- amido-, and its salts (MICHAELIS and BENZINGER), 1876, ii., 203; 1878, A., 58.
- nitro-, and its salts (BENZINGER), 1875, 1205; (MICHAELIS and BENZINGER), 1876, i., 599; 1878, A., 57.
- action of soda-lime on (MICHAELIS and BENZINGER), 1876, ii., 204.
- Phosphenylic bromide and its derivatives** (MICHAELIS and KÖHLER), 1876, ii., 420.
- Phosphenylic chloride** (MICHAELIS), 1873, 1148; 1874, 168.
- physical properties of (THORPE), 1880, T., 347.
- behaviour of, at a high temperature (BROGLIE), 1877, ii., 453.
- action of, on some chlorides (KÖHLER), 1881, A., 97.
- action of hydriodic acid on (MICHAELIS), 1874, 485.
- action of sulphuretted hydrogen on (KÖHLER and MICHAELIS), 1877, ii., 449.
- action of water on (GÖTTER and MICHAELIS), 1878, A., 723.
- Phosphenylic tetrachloride** (MICHAELIS), 1873, 1148; 1874, 168, 485; (MICHAELIS and KAMMERER), 1876, i., 597.
- antimony derivative of (KÖHLER), 1881, A., 98.
- Phosphenylic oxychloride** (MICHAELIS), 1874, 169.
- Phosphenylic chlorobromide and chlorotetrabromide** (MICHAELIS), 1874, 168.
- Phosphenylic thiochloride, and some derivatives of** (MICHAELIS and KÖHLER), 1876, ii., 525.
- synthesis of (KÖHLER), 1880, A., 558.
- Phosphenylous acid** (*benzenephosphinic acid*) (MICHAELIS and ANANOFF), 1875, 467.
- Phosphine.** See Hydrogen phosphide under Phosphorus.
- Phosphines** (PHILLIPS), 1873, 284.
- occurrence of, in the urine, etc., in acute phosphorus poisoning (SELM), 1875, 1059; 1882, A., 325.
- formation of, by the aid of reduction processes (v. HOFMANN), 1873, 883.
- Phosphobenzene** (MICHAELIS), 1875, 1203; (KÖHLER and MICHAELIS), 1877, ii., 450.
- Phosphomellogen** (BARTOLI and PAPA-SOGLI), 1882, A., 852.
- Phosphomolybdic acid, application of, to the detection of alkaloids** (v. STRUVE), 1874, 293.
- Phosphomolybdates** (RAMMELSBERG), 1878, A., 14.
- and their analyses (GIBBS), 1882, A., 702.
- estimation of phosphoric oxide in (GOOCH), 1881, A., 1169.
- Phosphonium compounds, constitution of** (MICHAELIS and LINK), 1882, A., 305.
- heat of formation of (OGIER), 1880, A., 150.
- Phosphonium iodide, preparation of** (v. HOFMANN), 1873, 842; (DAMOISEAU), 1881, A., 223.
- formation of (LISSENKO), 1877, i., 46.
- action of, on carbon disulphide (JAHN), 1880, A., 370.
- new combinations of aldehydes with (DE GIRARD), 1882, A., 710.
- Phosphoplatinic compounds** (POMEY), 1881, A., 802.
- Phosphorescence** (STÜRTZ), 1880, A., 598; (CHAPPUIS), 1881, A., 670; (CORNE), 1882, A., 1263.
- in plants, instances of (CRIÉ), 1882, A., 422.
- produced by electrical discharges (WIEDEMANN), 1880, A., 204.
- of organic and organised substances (RADZISZEWSKI), 1877, ii., 345, 863; 1881, A., 488.
- of decaying organisms (PFLÜGER), 1876, i., 950.
- Phosphorescent substances** (SEELHORST), 1873, 949.
- relation of strontium and lithium flames to (BÖTTGER), 1874, 643.
- observation of the ultra-red portion of the spectrum by means of (BECQUEREL), 1876, ii., 587.
- action of light on (CLÉMANDOT), 1881, A., 863.
- Phosphoretted hydrogen.** See Hydrogen phosphide under Phosphorus.
- Phosphoric acid.** See under Phosphorus.

**Phosphoric anhydride.** See Phosphoric oxide under Phosphorus.

**Phosphorite** of Carceres, line uranite in the (WIBEL), 1873, 1110.

from Estremadura (NIEDERSTADT), 1874, 346; (WOLFENSTEIN), 1878, A., 385.

from the South of France (L'HÔTE), 1881, A., 766.

decomposition of, by peat (BELETZKY), 1881, A., 457.

See also Manures under Agricultural Chemistry.

**Phosphorochalcite** (*chilit*) (CHURCH), 1873, 107; (SCHRAUF), 1881, A., 368.

**Phosphorous acid.** See under Phosphorus.

**Phosphorous anhydride.** See Phosphorous oxide under Phosphorus.

**Phosphorus**, presence of, in the rocks of Brittany (LECHARTIER), 1881, A., 700.

association of vanadium with, in many rocks (HAYES), 1875, 868.

experiments tending to show the non-elementary character of (LOCKYER), 1880, A., 4.

valency of (THORPE), 1875, 731; 1876, ii., 41; (GOLDSCHMIDT), 1882, A., 8.

mechanical explanation of the varying valency of (WALTER), 1874, 221.

allotropic modifications of (TROOST and HAUTEFEUILLE), 1873, 599; 1874, 769; (HOUSTON and THOMSON), 1875, 1160.

black (RITTER), 1874, 338; (BLONDLOT), 1874, 869.

conversion of yellow into red (v. SCHRÖTTER), 1874, 1059; (MEYER), 1882, A., 689.

phosphorescence of (JOUBERT), 1874, 1058; (MÜLLER-ERZBACH), 1880, A., 298.

determination of the specific volume of (THORPE), 1880, T., 386.

specific volume of, at its boiling point (MASSON and RAMSAY), 1881, T., 50.

crystals, preparation of (HERMAN), 1874, 869.

reaction of, with bromine (MERZ and WEITH), 1874, 334.

action of, on hydriodic and hydrobromic acids (DAMOISEAU), 1881, A., 222.

action of, on iodates (POLLACCI), 1874, 338; 1877, i., 344.

action of, on iodates in presence of atmospheric oxygen (CORNE), 1877, i., 491, 578; 1879, A., 103.

**Phosphorus**, behaviour of, to solutions of metals (BÖTTGER), 1874, 1060; 1878, A., 645.

action of, on alkaline solutions of metals (OPPENHEIM), 1873, 244.

reduction of carbon dioxide by (LEEDS), 1880, A., 237, 298.

oxidation of (CORNE), 1882, A., 1263.

atmospheric oxidation of (LEEDS), 1879, A., 881; 1880, A., 699, 847; 1881, A., 506; (MCLEOD), 1880, T., 118; (KINGZETT), 1880, T., 792, 795; A., 3.

solubility of (VULPIUS), 1878, A., 834; 1879, A., 104.

application of, to the "poling" of copper (WESTON), 1876, ii., 227.

in copper (LISMANN), 1878, A., 538.

in carbon disulphide, explosive product of a solution of (PROCTER), 1879, A., 996.

combinations of, with zinc and cadmium (RENAULT), 1873, 728.

and phosphates, part of, in putrefaction (LEFORT), 1874, 813.

physiological action of (SELM), 1881, A., 309.

poisoning, how long after death do the evidences of, remain in the body (FISCHER and MÜLLER), 1876, ii., 669.

necessity of examining the urine in case of (SELM), 1875, 1059.

occurrence of phosphorus bases in the urine, etc., in acute cases of (SELM), 1882, A., 325.

turpentine oil as an antidote in (KÖHLER and SCHIMPF), 1873, 179.

in fowls (FRAENKEL and RÖHMANN), 1882, A., 544.

**Phosphorus compounds** (GAUTIER), 1873, 352.

**Phosphorus salt**, opalescence produced by silicates in (CHAPMAN), 1877, i., 489.

**Phosphorus bromides and iodides**, thermochemistry of (OGIER), 1881, A., 218.

*tribromide*, physical properties of (THORPE), 1880, T., 335.

*pentabromide*, action of, on amides (WALLACH), 1877, i., 68.

action of, on aldehyde (TAWILDAROFF), 1874, 789.

action of, on ethoxy-compounds of phosphorus (GEUTHER), 1877, i., 296.

bromochlorides, constitution of (GEUTHER), 1877, i., 274.

**Phosphorus** chlorides, action of, on acids of phosphorus (GEUTHER), 1874, 540.  
*trichloride*, preparation and physical properties of (THORPE), 1880, T., 145, 333.  
 specific volume of (THORPE), 1875, 732.  
 action of antimony *pentachloride* on (KÖHLER), 1880, A., 613.  
 action of, on dimethylaniline (HANIMANN), 1876, ii., 417.  
 action of ethoxy-compounds of phosphorus on (CHAMBEON), 1877, i., 292.  
 action of iodine on (MOOT), 1881, A., 138.  
 action of, on potassium thiocyanate (LÖSSNER), 1874, 366.  
 action of, on toluene (LANGE), 1875, 1189; (MICHAELIS and LANGE), 1876, i., 392.  
 combination of, with titanium tetrachloride (BERTRAND), 1881, A., 347.  
*pentachloride*, vapour-density of (WURTZ), 1873, 726; (V. and C. MEYER), 1879, A., 579.  
 action of, on acetanilide, acetethylamide and benzanilide (WALLACH and HOFFMANN), 1877, ii., 187.  
 action of, on acetophenone (ENGLER), 1875, 889.  
 action of, on acetoluidide (WALLACH), 1877, i., 91.  
 action of, on amides (WALLACH), 1875, 883; 1877, ii., 182; (WALLACH and HOFFMANN), 1875, 1031; 1876, i., 604.  
 action of, on the amides of sulphoacids (WALLACH and HUTH), 1875, 1026; 1876, ii., 97.  
 action of, on citronellal (WRIGHT), 1874, 322.  
 action of, on ethanedisulphonic acid (KOENIGS), 1875, 140.  
 action of, on ethylic diethyloxalate (MARKOWNIKOFF), 1874, 144.  
 action of, on ethylic phenyloxamate (KLINGER), 1875, 1025; 1877, i., 711.  
 action of, on ethylic succinylsuccinate (REMSEN), 1876, i., 697.  
 action of, on molybdi anhydride (PIUTTI), 1880, A., 219.  
 action of, on  $\beta$ -naphthol (CLEVE and JUHLIN-DANFELDT), 1876, ii., 81.  
 action of, on phenol-*p*-sulphonic acid (KEKULÉ), 1873, 1239.

**Phosphorus pentachloride**, action of, on phenyl- and *p*-tolyl-oxamethanes (KLINGER), 1877, i., 710.  
 action of, on pyruvic acid (BÖRTINGER), 1873, 1221; (V. RICHTER), 1877, ii., 441.  
 action of, on sodium ethoxide (FRANCHIMONT), 1874, 565.  
 action of, on ethoxy-compounds of phosphorus (GEUTHER), 1877, i., 296.  
 action of, on sulphur oxychlorides (MICHAELIS), 1873, 134.  
 action of, on sulphonic acids (BAGLIA and KEKULÉ), 1873, 277.  
 action of, on tungstic anhydride (TECLU), 1877, ii., 709.  
 combination of, with other chlorides (CRONANDER), 1874, 338.  
 antimony *decachloride*, Weber's (KÖHLER), 1880, A., 613.  
 oxychloride. See Phosphorylchloride.  
*pentaffluoride* (THORPE), 1877, i., 46.  
 hydride (*phosphoretted hydrogen*; *phosphine*; *hydrogen phosphide*; *phosphorus trihydride*) (BRÖSSLER), 1882, A., 461.  
 from phosphonium iodide (RAMMELSBURG), 1873, 601.  
 evolution of, in the decomposition of hypophosphites (RAMMELSBURG), 1873, 2, 12.  
 spectrum of (HOFMANN), 1873, 340.  
 heat of formation of (OGIER), 1879, A., 5; 1880, A., 151.  
 decomposition of, by the silent electric discharge (P. and A. THENARD), 1873, 1093.  
 action of, on chloracetic acid (STEINER), 1876, i., 373.  
 action of, on sulphur (JONES), 1876, i., 648.  
 reducing action of (HODGKINSON), 1876, ii., 479.  
 compounds of, with cuprous chloride (RIBAN), 1879, A., 503.  
 estimation of, in gaseous mixtures (RIBAN), 1879, A., 503.  
 hydride (*phosphorus dihydride*; *liquid phosphoretted hydrogen*) (V. HOFMANN), 1874, 764.  
 hydride (*diphosphorus hydride*), solid, heat of formation of (OGIER), 1879, A., 5; 1880, A., 151.  
 phenylated (GÖTTER and MICHAELIS), 1878, A., 723.  
 phosphides, production of, by decomposition of hypophosphites (RAMMELSBURG), 1873, 2.  
 metallic (EMMERLING), 1879, A., 508.

**Phosphorus iodides**, molecular weights of (TROOST), 1882, A., 1264.  
*diiodide*, action of silver chloride on (GAUTIER), 1874, 542.  
*pentiodide*, existence and properties of (HAMPTON), 1881, A., 507.  
*iodochloride* (MOOT), 1881, A., 138.  
*oxyiodide*. See *Phosphoryl iodide*.  
*suboxide* (REINITZER and GOLDSCHMIDT), 1880, A., 609.  
*phosphorous oxide (phosphorous anhydride)* (REINITZER), 1882, A., 140.  
*phosphoric oxide (phosphorus pentoxide; phosphoric anhydride)*, action of, on cetylic alcohol (MARKOWNIKOFF), 1874, 144.  
 formation of the anhydrous acids of the fatty and aromatic series by the action of, on the corresponding acids (GAL and ETARD), 1876, i., 889.  
**Phosphorus acids**, heat of formation of (THOMSEN), 1875, 31.  
 action of phosphorus chlorides on (GEUTHER), 1874, 540.  
**Hypophosphorous acid** (PONNDORF), 1877, i., 275; (GEUTHER), 1877, i., 276.  
 preparation of crystalline (THOMSEN), 1875, 41.  
 action of phosphorus chlorides on (GEUTHER), 1874, 541.  
*hypophosphites* (RAMMELSBERG), 1873, 1.  
 decomposition, and reducing power of (RAMMELSBERG), 1873, 12.  
 physiological action of (PAQUELIN and JOLLY), 1878, A., 994.  
**Phosphorous acid**, crystallised, preparation of (GROSHEINTZ), 1877, ii., 701.  
 constitution of (ZIMMERMANN), 1874, 655; 1875, 440; (MICHAELIS), 1875, 1160; (GEUTHER), 1877, i., 276.  
 action of ethoxy-compounds of phosphorus on (CHAMBER), 1877, i., 292.  
 reducing power of (RAMMELSBERG), 1873, 13.  
*anhydride of* (REINITZER), 1882, A., 140.  
*phosphites*, composition of (RAMMELSBERG), 1877, i., 277; (WURTZ), 1877, i., 440.  
 reducing power of (RAMMELSBERG), 1873, 13.  
**Pyrophosphoric acid**, action of phosphorus chlorides on (GEUTHER), 1874, 541.

# Phosphorus :—

*pyrophosphates* (PAHL), 1871, 338, 774.  
 production of, by decomposition of hypophosphites (RAMMELSBERG), 1873, 12.  
**Hypophosphoric acid** and its salts (SALZER), 1877, ii., 702; 1879, A., 105; 1882, A., 461; (CORNE), 1882, A., 1264.  
**Phosphoric acids**, phenylated (WALLACH and HEYMER), 1876, i., 263.  
**Phosphoric acid**, presence of, in alkaline blood (FOKKER), 1873, 925.  
 ratio of, to sugar, in the root and leaves of the beet (PELLER), 1879, A., 818.  
 amount of, in coal ashes (LE CHATELIER and DURAND-CLAYE), 1873, 1066.  
 percentage of, in wood ashes (NESSLER), 1882, A., 1313.  
 new source of (MÄRCKER), 1882, A., 1229.  
 extraction of (COLSON), 1881, A., 320.  
 extraction of the so-called soluble, from superphosphates (ERLENMEYER), 1877, i., 759.  
 method of removing, from ores (STEAD), 1879, A., 91.  
 preparation of (SCHEIBLER), 1874, 1189; (MARKOE), 1877, i., 683; (HORN), 1880, A., 367.  
 spectra of blowpipe beads of (HORNER), 1874, 642.  
 electrolysis of solutions of, with electrodes of gas-coke and graphite (BARTOLI and PAPASOGLI), 1882, A., 852.  
 and the phosphates, thermic researches on (BERTHELOT and LUGININ), 1876, i., 514.  
 neutralisation phenomena of (THOMSEN), 1876, i., 874.  
 melting-point of crystallized (BERTHELOT), 1878, A., 263.  
 action of, on calcium carbonate (RITTHAUSEN), 1878, A., 198.  
 action of, on the sodium salts of tungstic acid (LEFORT), 1882, A., 702.  
 influence of sodium nitrate on the absorption of (FIEDLER), 1881, A., 457.  
 saturation of, by bases (JOLY), 1882, A., 692.  
 use of, in the manufacture of sugar (SCHEIBLER), 1874, 1189; (ANON.), 1876, ii., 341; (VIBRANS), 1877, i., 357.



**Phosphoric acid** in soils, guano and manures. See under Agricultural Chemistry.

influence of, on the coagulation of the blood (ORÉ), 1876, i., 725.

combinations of, in the nervous substance (JOLLY), 1880, A., 274.

relation of, to nitrogen in urine (ZUELZER), 1877, ii., 205.

in the urine of Graminivora (LEEuw), 1882, A., 636.

in the urine of Ruminants (LEEuw), 1882, A., 543.

ethereal salts of, preparation of aromatic (WEBER and HEIM), 1882, A., 839.

as a test for alkaloids (NOWAK and KRATSCHMER), 1874, 1018.

**Phosphates** (ERLENMEYER), 1878, A., 269; 1879, A., 201.

occurrence of, in the Cambrian rocks (HICKS), 1875, 872.

of the basaltic tufa (BOŘICKÝ), 1874, 236.

of the Lot district, probable origin of (BAUDRIMONT), 1873, 609.

of Waldgirmes (STRENG), 1881, A., 525.

distribution of, in muscles and tendons (JOLLY), 1880, A., 275.

preparation of (E. and H. ALBERT), 1881, A., 950.

dissolved by ammonium citrate solutions, composition of (LLOYD), 1882, T., 316.

and phosphoric acid, thermic researches on (BERTHELOT and LUGNIN), 1876, i., 514.

action of ammonium citrate on (GRUPE and TOLLENS), 1880, A., 825; 1881, A., 759, 845; (WAGNER and HERCHER), 1881, A., 846; (ERLENMEYER and ANTZ), 1881, A., 847.

behaviour of, in water charged with carbonic acid (ALBERT and WAGNER), 1881, A., 117.

action of hydrochloric acid on (THOMAS), 1878, T., 374.

action of sulphuric acid on (POST), 1880, A., 425.

assimilability of (JOULE), 1873, 766.

and phosphorus, part of, in putrefaction (LEFORT), 1874, 813.

neutral to litmus (FILHOL and SENDERENS), 1881, A., 1101; 1882, A., 693.

estimation of (BENOIT), 1876, i., 109.

**Phosphates**, natural, method of analysing (MENE), 1873, 1260.

See also under Agricultural Chemistry.

**Phosphoric acid**, detection, estimation and separation:—

blowpipe test for (ROSS), 1880, A., 746.

testing of, for phosphorous acid, nitric acid, and arsenic (HAGER), 1873, 940.

precipitation of, by ammonia in presence of lime, baryta, magnesia, alumina and ferric oxide (PELLET), 1877, i., 578.

estimation of (SCHUMANN), 1873, 940; (KITCHIN), 1873, 942;

(HEINTZ), 1874, 915; (JEAN), 1874, 1007; (STODDART), 1875, 285; (MACAGNO), 1875, 780;

(OGILVIE), 1875, 1289; (PARNELL), 1876, i., 745; (PELLET), 1877, i., 578; (CHAMPION and PELLET; KERN), 1877, i., 738;

(BRÜGELMANN), 1877, i., 741; (STOLBA), 1877, ii., 355; (MOHR), 1877, ii., 800; 1880, A., 575;

1882, A., 1231; (FINKENER), 1879, A., 275; (HEHNER), 1879, A., 482; (JOHNSON and JENKINS), 1879, A., 966; (SCHLICKUM), 1880, A., 824; (PEITZSCH), 1881, A., 194; (KÖNIG), 1881, A., 644;

(GOOCH), 1881, A., 1168; (PERROT), 1882, A., 94; (V. RAUMER), 1882, A., 553; (ANON.), 1882, A., 895; (PEMBERTON; STÜNKEL, WETZKE and WAGNER), 1882, A., 1318.

spectroscopical estimation of (SETTEGAST), 1879, A., 829.

estimation of magnesia, lime and (VILLE), 1873, 294; 1875, 285.

effect of silicic acid on the estimation of, by ammonium molybdate (JENKINS), 1876, ii., 115; 1877, i., 344.

estimation of, in presence of silicic acid (ATKINSON), 1877, ii., 353.

different methods of estimating, in presence of iron oxide, alumina, potash, and magnesia (JANOVSKY), 1873, 91.

estimation of, in guanos. See Manures under Agricultural Chemistry.

estimation of, in, and separation of, from, iron, iron ores and steel. See under Iron.

separation of, from its salts (CLASSEN), 1879, A., 972.

**Phosphoric acid, separation:—**

- separation of, from molybdc acid (REICHARDT), 1873, 1260.
- separation of, from pyrophosphoric acid (MEYER), 1880, A., 574.
- separation of, from uranium oxide (REICHARDT), 1873, 1260.

**Metaphosphoric acid, action of phosphorus pentachloride on (GEUTHNER), 1874, 541.**

- influence of orthophosphoric acid and, on the coagulation of the blood (ORÉ), 1876, i., 725.

as a test for albumin (HINDENLANG), 1882, A., 110.

**metaphosphates, production of, by the decomposition of hypophosphites (RAMMELSBURG), 1873, 12.****trimetaphosphates, salts of (LINDBOM), 1875, 1238.****Phosphorus sulphides (RAMME), 1879, A., 883.**

disulphide (RAMME), 1879, A., 691.

trisulphide, sulphur salts derived from (LEMOINE), 1882, A., 9.

pentasulphide (RAMME), 1879, A., 691; (GOLDSCHMIDT), 1882, A., 693.

vapour-density of (V. and C. MEYER), 1879, A., 579.

action of, on absinth and citronellal (WRIGHT), 1874, 320.

action of, on terpenes and their derivatives (WRIGHT), 1874, 620.

sulphobromide. See Thiophosphoryl bromide.

sulphochloride. See Thiophosphoryl chloride.

**Phosphorus compounds, aromatic**

- (MICHAELIS), 1873, 1148; 1874, 168, 485; 1875, 1203; 1877, ii., 453; (MICHAELIS and ANANOFF), 1875, 467; (MICHAELIS and MATTHIAS), 1875, 170; (MICHAELIS and GRAEFF), 1876, i., 274, 596; (MICHAELIS and LANGE), 1876, i., 392; (MICHAELIS and KAMMERER), 1876, i., 597; (MICHAELIS and BENZINGER), 1876, i., 598; ii., 203, 204; 1878, A., 57; (MICHAELIS and KÖHLER), 1876, ii., 420, 525; 1877, ii., 449, 450; (GÖTTER and MICHAELIS), 1878, A., 723; (MICHAELIS and DITTLER), 1879, A., 528; (KÖHLER), 1880, A., 558; 1881, A., 91, 97; (MICHAELIS and PANEK), 1880, A., 640; 1881, A., 603; 1882, A., 958; (MICHAELIS and LINK), 1882, A., 305; (MICHAELIS and GLEICHMANN), 1882, A., 1062; (MICHAELIS and REESE), 1882, A., 1287.

**Phosphorus thiocyanate (MIQUEL), 1877, ii., 872.****Phosphorus, detection and estimation:—**

analysis of commercial red (FRESSENIUS and LUCK), 1873, 89.

detection of (SELM), 1873, 1166.

Mitscherlich's test for (SCHIFFERDECKER), 1875, 497.

detection of, in chemico-legal examinations (NEUBAUER), 1873, 943; (BUCHNER), 1876, i., 757; (SELM), 1877, i., 108.

estimation of, in iron. See Iron.

estimation of, in organic substances and in vegetable and animal compounds (BRÜGELMANN), 1876, i., 743; 1877, i., 739.

**Phosphorus-betaines (LETTS), 1881, A., 717; 1882, A., 718.****Phosphorus-bronze and its uses (ANON.), 1874, 610; 1877, ii., 376.****Phosphoryl trichloride, preparation and physical properties of (THORPE), 1880, T., 145, 337.**

formation of (REMSEN), 1877, i., 685.

specific volume of (THORPE), 1875, 731; 1876, ii., 41.

behaviour of potassium chlorite to (SPRING), 1875, 1000.

action of certain metals and non-metals on (REINITZER and GOLDSCHMIDT), 1880, A., 609.

thio-. See Thiophosphoryl chloride.

**Phosphoryl chlorobromide (CHAMBER), 1877, i., 274.**

preparation and physical properties of (THORPE), 1880, T., 343.

iodide (BURTON), 1882, A., 140.

**Phosphotolylic chloride (MICHAELIS), 1879, A., 721; (MICHAELIS and PANEK), 1880, A., 640; 1882, A., 958.****Phosphotolylic tetrachloride (MICHAELIS and PANEK), 1880, A., 641; 1882, A., 959.****Phosphotungstic acid and its salts**

(GIBBS), 1877, ii., 848; 1882, A., 469; (SPRENGER), 1881, A., 140.

as a precipitant for organic bases (SCHEIBLER), 1873, 246; 1874, 192.

**Phosphotungstates, estimation of phosphoric oxide in (GOOCH), 1881, A., 1169.****Phosphouranylite (GENTH), 1880, A., 97.****Phosphoxylylic chloride (MICHAELIS and PANEK), 1880, A., 641.****PHOTOCHEMISTRY—**

**Light**, laws of magnetic and electric forces in magnetic and dielectric media, and their relation to the theory of (STEFAN), 1875, 995.

## PHOTOCHEMISTRY—

**Light**, experimental estimation of the velocity of white and coloured (YOUNG and FORBES), 1881, A., 861.

mean intensity of, that has passed through absorbing media (BOT-TOMLEY), 1882, A., 1.

heat spectrum of (LAMANSKY), 1873, 349.

absorption of, anomalous dispersion and the chemical action of the solar spectrum, relations between (VOGEL), 1874, 1121.

absorption and refraction of, connection between (PUSCHL), 1874, 527.

selective absorption of (ACKROYD), 1877, i., 571.

transverse absorption of (ACKROYD), 1878, A., 101.

absorption of chemically active rays of, in the sun's atmosphere (VOGEL), 1873, 712.

absorption of, by metals and paper (AYMONNET), 1877, ii., 405.

**Achromatism**, chemical (PRAZMOWSKI), 1874, 1125.

**Radiometer**, experiments with Crookes' (BÜTTGER), 1876, ii., 266.

**Radiation**, attraction and repulsion accompanying (CROOKES), 1875, 39.

from incandescent platinum (VIOLE), 1879, A., 573; 1881, A., 669.

**Light**, chemical action of (LEMOINE), 1882, A., 129.

theory of the chemical action of (VOGEL), 1878, A., 3.

measurement of the chemical intensity of (DEWAR), 1873, 24; (MARCHAND), 1874, 12, 525; (VOGEL), 1874, 424; (BECQUEREL), 1874, 942; (PHIPSON), 1874, 1124; (EDER), 1880, A., 361; (SMITH), 1880, A., 685; 1881, A., 955; (LEEDS), 1880, A., 837; (DOWNES), 1881, A., 485.

self-registering instrument for meteorological measurements of, in universally comparable measure (ROSCOE), 1874, 866.

method for the continuous measurement of the intensity of, and of its application to physiological and botanical researches (KREUSLER), 1880, A., 188.

influence of colour on reduction by (LEA), 1874, 944.

## PHOTOCHEMISTRY—

**Light**, change in colour-tone of colours and pigments by diminution of the intensity of (ALBERT), 1882, A., 1153.

effect of, on chemical actions, and especially on oxidations (CHASTAING), 1877, ii., 818.

effect of, on chemical compounds (BLUNT), 1880, A., 521.

diffused, action of, on a mixture of ethylene and chlorine peroxide (FÜRST), 1881, A., 399.

decomposition of ferric chloride and of ferric salts of organic acids by (EDER), 1881, A., 670.

action of, on the iron salt of oxalic acid (JODIN), 1882, A., 911.

action of, on glass (GAFFIELD), 1882, A., 352.

action of, on hydrogen and iodine, and on hydriodic acid (LEMOINE), 1878, A., 266.

influence of, on the electrical behaviour of metals dipped in water or in saline solutions (HANKEL), 1877, ii., 818.

action of, on phosphorescent substances (CLÉMANDOT), 1881, A., 863.

action of, on potassium iodide (VIDAU), 1875, 326.

action of, on haloid silver salts (VOGEL), 1873, 948; 1874, 332, 756; 1875, 326; (LEA), 1877, ii., 690; 1878, A., 191; (ABNEY), 1882, A., 565.

action of, on silver bromide (VOGEL), 1874, 217, 424; 1876, i., 510; ii., 265; (LEA), 1874, 1044; 1876, i., 28; 1877, i., 266; 1878, A., 650; (BECQUEREL), 1875, 30; (EDER), 1881, A., 762; (NOEL), 1881, A., 862.

action of, on silver bromide impregnated with various organic colouring matters (CROS), 1879, A., 504.

action of, on silver chloride (v. BIBRA), 1875, 1162; 1876, i., 43; (LEA), 1878, A., 650; (RICHE), 1879, A., 694; (ABNEY; EDER and PIZZIGHELLI), 1882, A., 2.

action of, on silver iodide (BECQUEREL), 1875, 30; (RODWELL), 1875, 532; (LEA), 1876, i., 28.

coloured, influence of, on the evaporation of water (BAUDRI-MONT), 1879, A., 863.

## PHOTOCHEMISTRY—

**Light**, behaviour of carbohydrates towards chromates under the influence of (EDER), 1879, A., 911.

conversion of cane-sugar into glucose by the action of (RAOULT), 1873, 490.

of phosphorescent uranium compounds, analysis of the (BECQUEREL), 1873, 25.

**Photographic methods and processes:—**

**Photography**, references to papers on (ANON.), 1873, 424.

dry-plate, and sensitizers (VOGEL), 1873, 424.

sulphur and other flames utilisable in (RICHE and BARDY), 1875, 669.

application of the nitric oxide and carbon disulphide lamp to (DELACHANAL and MERMET), 1875, 294.

use of incandescent lamps for (BOLAS), 1882, A., 1240.

removal of sodium thiosulphate in (ANON.), 1876, i., 460.

decorating mirrors and metallic surfaces by the aid of (LECLÈRE), 1882, A., 247.

use of, in printing textile fabrics (ANON.), 1876, ii., 232.

pigment or carbon-, preparation of paper for (OTT), 1879, A., 560.

colour, by tinting layers of coagulated albumin (CROS and CARPENTIER), 1882, A., 686.

microscopic (ERKMANN), 1873, 307.

polychromic (VIDAL), 1873, 1267.

photographic images, inversion of, by the prolonged action of light (JANSSEN), 1881, A., 1.

processes, certain (POITEVIN), 1877, ii., 942.

purposes, preservation of albumin for (ZAY), 1873, 423.

**Photographs**, coloured (ALBERT), 1881, A., 1178.

exhibiting natural colours, production of (ABNEY), 1880, A., 72.

soft and brilliant (ENGELMANN), 1874, 931.

changes of, by prolonged action of light (JANSSEN), 1881, A., 1179.

nature of the white spots which often appear on (BAUDRIMONT), 1873, 424.

burnt-in (LIÉBERT), 1875, 1303.

## PHOTOCHEMISTRY—

photographers' dark room, testing of yellow glass for (FOSTER), 1873, 948.

**Photographic plates**, abnormal action of many colouring matters on the susceptibility to light of (VOGEL), 1875, 604.

dry plates, preparation of, by daylight, by desensitizing and re-sensitizing the silver compounds (HIMES), 1875, 194.

silver bromide dry plates for different portions of the solar spectrum, sensitiveness of (VOGEL), 1880, A., 837; 1881, A., 773.

uranium bromide (CHARDON), 1873, 424.

gelatin-plates, Wilde's silver chloride, for diapositives (ANON.), 1882, A., 1142.

negative silver-bath, rectification of (ANDERSON), 1873, 424.

eosin, a photographic action of (WATERHOUSE), 1877, ii., 232.

silver bromide, photo-chemical behaviour of, in presence of gelatin (VOGEL), 1880, A., 837.

photochemistry of (EDER), 1881, A., 762.

silver chloride, photochemistry of (ABNEY; EDER and PIZZIGHELLI), 1882, A., 2.

silver haloids, theory of the action of certain organic substances in increasing the sensitiveness of (LEA), 1878, A., 191.

photochemical decompositions (MERGET), 1873, 1169; 1874, 1020.

collodion emulsion and the influence of different bromides (WARNERKE), 1876, ii., 232.

gelatin bromide emulsion (SCHNAUSS), 1880, A., 929; (EDER), 1882, A., 111; (PLENER), 1882, A., 902.

negatives, reproduction and inversion of (LIESEGANG), 1873, 1070.

silver, conversion of, and the action of potassium ferricyanide on metallic silver (EDER), 1877, ii., 234.

intensifying by means of potassium sulphide (ANON.), 1879, A., 184.

**Developers**, alkaline (ABNEY), 1877, i., 572.

gases as, and on the influence of physical condition on sensitiveness (MERGET), 1873, 1169; 1874, 1020.



## PHOTOCHEMISTRY—

- Developers**, ferro-oxalate-citrate as a (ABNEY), 1882, A., 1009.  
 potassium ferrous oxalate as a (EDER), 1880, A., 590.  
 sodioferrie oxalate as a (EDER), 1881, A., 671.  
 iron as (ROTTIER and WALDACK), 1877, i., 756.  
 alkaline iron liquid as (EDER and TóTH), 1877, ii., 235.  
 pyrogallol as a dry plate, preparation of (THORPE), 1881, A., 662.  
 new, for silver bromide dry plates (EDER), 1881, A., 317.  
 for silver chloride pictures, preparation of (EDER and PIZZICHELLI), 1882, A., 2.  
 rapid, for wet plates (EDER), 1880, A., 765.

- Photographic printing**, platinum (WILLIS), 1874, 1019; (ANON.), 1882, A., 113.  
 silver (ABNEY), 1882, A., 2.  
 in natural colours (KAISER), 1878, A., 613.  
 without silver salts (ANON.), 1876, i., 460.  
 without the use of a press (JACOBSEN), 1874, 930.  
 new process (WOODBURY), 1874, 1021.

- Photographic enlargements**, new method of (GINTL), 1878, A., 456.

- Photographing bacteria** (KOCH), 1879, A., 1046.

- Heliographic printing**, new methods of (GOURDON), 1873, 1203; (OTT), 1879, A., 750; (KAVČIČ), 1882, A., 1009.  
 in lines and half-tones (EDER), 1882, A., 1008.  
 on sheet-zinc (OTT), 1879, A., 751.

- Albertotype** (TOWLER), 1873, 424.

- Cyanotypes** (EDER), 1882, A., 113.

- Photogalvanography** (LEIPOLD), 1876, i., 118.

- Photolithography** (ANON.), 1873, 948; (PAUL), 1874, 1020; (OTT), 1879, A., 836.  
 ink for (TOOVEY), 1882, A., 114.

- Photostereotyping** (FINK), 1874, 930, 1020.

- Phototypography**, ink for (TOOVEY), 1882, A., 114.

**Polarisation:—**

- Rotatory power** (LANDOLT), 1878, A., 1, 457; 1881, A., 795.  
 variation of (MULDER), 1875, 222.  
 remarks on the symbol ( $\alpha$ ) of the specific (HESSE), 1876, i., 667.

## PHOTOCHEMISTRY—

- Rotatory power of carbon compounds** (THOMSEN), 1881, A., 215, 257, 709, 1020; (LANDOLT), 1881, A., 403, 795.

- of solutions of carbon compounds, relations between the formulæ and the (LE BEL), 1875, 874.

- of liquid carbon compounds, relation between their thermal properties and (BRÜHL), 1882, A., 263, 445; (THOMSEN), 1882, A., 567.

- of gases (HINRICHS), 1873, 838.

- of various liquids (KERR), 1880, A., 599; 1882, A., 678.

- of substances in solution (LANDOLT), 1876, ii., 371.

- of active substances, influence of inactive solvents on (OUDEMANS), 1873, 461.

- of albumin (HAAS), 1876, ii., 317.

- of the albuminoid substances in blood-serum, and their estimation by this means (FREDERICQ), 1882, A., 75, 110.

- of some derivatives of the cinchona alkaloids (HOWARD), 1873, 1177.

- of cinchonicine and quinicine (HESSE), 1876, i., 609; 1878, A., 435.

- of conquinamine (HESSE), 1878, A., 436; 1881, A., 1157; (OUDEMANS), 1881, A., 1154.

- of quinamine and its derivatives (HESSE), 1881, A., 926.

- of quinine, effect of temperature on (DRAPER), 1877, i., 322.

- of amylic alcohols (PIERRE and PUCHOT), 1873, 1017; (LEY), 1874, 350.

- of asparagine (LANDOLT), 1881, A., 257.

- in different solvents (BECKER), 1881, A., 801.

- destruction of the (CHAMPION and PELLET), 1876, ii., 215.

- of aspartic acid (LANDOLT), 1881, A., 257.

- in different solvents (BECKER), 1881, A., 801.

- of the borneols (DE MONTGOLFIER), 1877, i., 78; ii., 626.

- of camphor (LANDOLT), 1876, ii., 273.

- of carbohydrates and their derivatives (THOMSEN), 1881, A., 147, 245; (LANDOLT), 1881, A., 257.

- of certain carbohydrates, relation between crystalline form and (SCHEIBLER), 1881, A., 245.

## PHOTOCHEMISTRY—

- Rotatory power** of dextrose (TOLLENS), 1876, ii., 284; 1877, i., 265; (HOTTE-SEYLER), 1876, ii., 553.  
 of glycogen (KÜLZ), 1881, A., 569.  
 of invert-sugar (ALLEN), 1881, A., 653; (WATT), 1881, A., 654.  
 influence of temperature on (CASAMAJOR), 1879, A., 832.  
 of lactose (MEISSL), 1881, A., 150.  
 of maltose (BROWN and HERON), 1879, T., 618; (SUNDVIK), 1882, A., 707; (MEISSL), 1882, A., 818.  
 of mannitol (VIGNON), 1874, 245; 1875, 53; (BOUCHARLAT), 1875, 443; 1877, i., 449; (MÜNTZ and AUBIN), 1877, i., 294, 589.  
 of starch (BAILY), 1877, i., 294.  
 of starch-paste and starch-dextrose (BROWN and HERON), 1879, T., 616.  
 of sucrose (TOLLENS), 1877, ii., 875; 1879, A., 136, 557; (PELLET), 1878, A., 22; (ALLEN), 1881, A., 653.  
 of sucrose in alkaline solutions (THOMSEN), 1881, A., 1023.  
 of sucrose in different solvents (TOLLENS), 1881, A., 243; 1882, A., 30.  
 of sucrose, different, according to the mode of measurement adopted (CALDERON), 1876, ii., 427.  
 of sugar solutions, influence of salts on the (KOHLENSCH), 1873, 92; (MÜNTZ), 1876, ii., 552.  
 of isocholesterin (SCHULZE), 1879, A., 634.  
 of cystin (KÜLZ; MAUTHNER), 1882, A., 1206.  
 of *n*-heptane from *Pinus Sabiniana* (THORPE), 1879, T., 302.  
 of malic acid and its salts (SCHNEIDER), 1880, A., 629; 1881, A., 892; (THOMSEN), 1882, A., 911.  
 influence of sulphuric and of acetic acids on (SCHNEIDER), 1881, A., 893.  
 of *p*-santonide (NASINI), 1881, A., 919.  
 of santonin-derivatives (CARNE-LUTTI and NASINI), 1881, A., 180.  
 of styrolene (BERTHELOT), 1876, i., 864; 1878, A., 296.  
 of tartaric acid in aqueous solution (LANDOLT), 1874, 41; 1881, A., 257.

## PHOTOCHEMISTRY—

- Rotatory power** of thiosulphates (BICHAT), 1874, 227.  
 of tyrosine (MAUTHNER), 1882, A., 1206.  
 of isovaleric acid and its ethers (PIERRE and PICHOT), 1873, 55, 1017.  
 of beer-worts (KJELDAHL), 1879, A., 993.  
 optical saccharimeter (PRAZMOWSKI), 1873, 829; (CASAMAJOR), 1882, A., 105.  
**Polarimetric estimations**, weight of sugar to be taken for (DE LUYNES and GIRARD), 1875, 1293.  
 of anthracene in crude anthraquinone (NICKELS), 1880, A., 292, 757.  
 of the amount of juice in beets (JICINSKÝ), 1873, 1262.  
 of sugars in wine (NEUBAUER), 1876, ii., 666; 1877, ii., 521, 939; 1879, A., 82; (NESSLER and BARTH), 1882, A., 999.  
**Magnetic rotation** (BECQUEREL), 1875, 1149.  
 of carbon compounds (PERKIN), 1882, T., 330.  
 of gases at ordinary temperatures and pressure (BECQUEREL), 1879, A., 576.  
 of vapours (BICHAT), 1879, A., 577.  
**Refraction** of carbon compounds (JANOVSKY), 1881, A., 214.  
 in the gaseous state (MASCART), 1878, A., 359, 693.  
 influence of their structure on the (KANONNIKOFF), 1882, A., 349.  
 in relation to their chemical constitution and density (BRÜHL), 1880, A., 295, 781; 1881, A., 489.  
 in relation to their thermal properties (BRÜHL), 1882, A., 263, 445; (THOMSEN), 1882, A., 567.  
 of solid inorganic compounds in solution (BEDSON and WILLIAMS), 1882, A., 351.  
 of isomeric compounds (GLADSTONE), 1881, A., 213.  
 of electricity (TRIBE), 1881, A., 963; 1882, A., 260.  
 of gases (MASCART), 1874, 538.  
 of gases and vapours (MASCART), 1878, A., 359, 693.  
 of limonene and myristicol (GLADSTONE), 1873, 972.

## PHOTOCHEMISTRY—

- Refraction** of mercurous iodide (DES CLOIZEAUX), 1878, A., 474.  
 of saline solutions, modular properties of (VALSON), 1873, 460.
- Refraction equivalents** of carbon, hydrogen, and oxygen (LANDOLT), 1873, 460.  
 of carbon, hydrogen, oxygen and nitrogen in organic compounds (GLADSTONE), 1881, A., 958; 1882, A., 133.
- Double refraction**, influence of change of temperature and pressure on (PFAFF), 1881, A., 334.
- Molecular refraction**, alteration of (JANOVSKY), 1881, A., 862.  
 of carbon compounds (BRÜHL), 1880, A., 295, 781.  
 of liquid carbon compounds (LANDOLT), 1882, A., 909.  
 of carbon compounds in relation to their chemical constitution (SCHRÖDER), 1882, A., 351, 910, 1153.  
 of crotonic and methacrylic acids (BRÜHL), 1882, A., 827.  
 of methylic and ethylic citraconates and mesaconates (BRÜHL), 1882, A., 829.
- Refractive index** and dispersive power of cymenes (WRIGHT), 1873, 699.  
 of ethylic ethoxyphenylacrylates (PERKIN), 1881, T., 412.  
 of ethylic thiocarbonates (WIEDEMANN), 1873, 620.  
 of glycerol (LENZ), 1880, A., 757.  
 of *n*-heptane from *Pinus Sabiniana* (THORPE), 1879, T., 301.  
 of liquids, determination of, by means of the microscope (SORBY), 1878, T., 487.  
 of mixtures of isomorphous salts, variation of the (DUFET), 1878, A., 631; 1881, A., 2.  
 of sulphuretted substitution-products of the carbonic ethers (WIEDEMANN), 1873, 620.
- Dispersion** and its anomalies, explanation of (SELLMEIER), 1873, 242.  
 table of the coefficients of, of carbon compounds (BRÜHL), 1880, A., 781.  
 of isomeric carbon compounds (GLADSTONE), 1881, A., 213.  
 of cymenes (WRIGHT), 1873, 699.
- Dispersion, rotatory**, apparatus for measuring (PRAZMOWSKI), 1873, 829; (ZENGER), 1882, A., 677.

## PHOTOCHEMISTRY—

- Spectral lines** of low temperature (MARQUSS of SALISBURY), 1873, 711.
- Spectrum**, lecture-experiment on the (KESSLER), 1876, ii., 266.
- Spectra** researches on (LOCKYER), 1874, 424; 1878, A., 357; 1879, A., 575.  
 theory of (LECOQDE BOISBAUDRAN), 1876, ii., 470.  
 production of, by the oxyhydrogen flame (MARVIN), 1876, ii., 156.  
 produced by the electric spark in a compressed gas (CAZIN), 1878, A., 357.  
 graphic representation of (VIERORDT), 1874, 865; 1875, 38.  
 new method of observing (LOCKYER), 1881, A., 956; 1882, A., 249.  
 simple method of observing the reversed lines of (GÜNTHER), 1878, A., 463.  
 distribution of chemical force in (DRAPER), 1873, 233.  
 effect of, on the haloid salts of silver, and mixtures of the same (ABNEY), 1882, A., 565.  
 difference in, in one and the same substance (MOSER), 1878, A., 829; (VOGEL), 1879, A., 1, 189.  
 acceleration of oxidation caused by the less refrangible end of (ABNEY), 1880, A., 429.  
 displacement of the lines of, by the motion due to the sun's rotation (THOLLON), 1879, A., 574.  
 absorption-bands in, transmitted by benzene and its derivatives, cause of (HARTLEY), 1881, T., 165.  
 absorption-bands in, produced by certain colourless liquids (RUSSELL and LAPRAIK), 1881, T., 168.  
 influence of the molecular grouping in organic bodies on their absorption in the infra-red region of (ABNEY and FESTING), 1881, A., 487, 957; 1882, A., 130.  
 observation of the ultra-red portion of, by means of phosphorescent substances (BECQUEREL), 1876, ii., 587.  
 ultra-violet limit of, at various heights (CORNU), 1880, A., 201.  
 ultra-violet rays, wave lengths of (DRAPER), 1874, 538; 1875, 38.  
 direct visibility of (SEKULIČ), 1873, 125.

## PHOTOCHEMISTRY—

- Spectra**, ultra-violet rays, absorption of (DE CHARDONNET), 1881, A., 1091.  
 absorption of, by organic substances (HARTLEY and HUNTINGTON), 1880, A., 201, 430; 1881, A., 957; 1882, A., 130.  
 absorption of, by various substances (SORET), 1878, A., 629.  
 examination of terpenes for cyment by means of the (HARTLEY), 1880, T., 676.  
 cold bands in dark (DESAINS and AYMONNET), 1876, i., 27.  
 of atmospheric air (GOLDSTEIN), 1882, A., 677.  
 of the aurora borealis (v. OETTINGEN), 1873, 242.  
 of chemical compounds (MOSE), 1877, ii., 688.  
 of elements and their compounds (CIAMICIAN), 1879, A., 685; 1880, A., 361; 1882, A., 349.  
 of different elements, identity of (LIVEING and DEWAR), 1881, A., 957; 1882, A., 253.  
 ultra-violet, of elementary bodies, photographs of (HARTLEY), 1882, T., 84.  
 of Bessemer flame (WATTS), 1873, 461.  
 of coloured flames (GOUY), 1877, ii., 817.  
 of gases (GOLDSTEIN), 1875, 527; 1876, i., 181; (WÜLLNER), 1875, 527.  
 in Geissler's tubes (WÜLLNER), 1873, 242; 1874, 113; 1875, 527.  
 relative intensity of (CAPRON), 1880, A., 685.  
 influence of temperature and pressure on (CIAMICIAN), 1879, A., 101, 685.  
 effect of pressure on (STEARNS and LEE), 1873, 996.  
 of compound gases (HAUTEFEUILLE and CHAPPUIS), 1881, A., 221.  
 variability of, of incandescent gases (SCHENK), 1874, 1122; 1875, 119.  
 of gases from meteoric iron (WRIGHT), 1876, i., 27.  
 of vapours (LOCKYER), 1876, i., 181; ii., 34.  
 at high temperatures (LOCKYER), 1874, 1124.  
 influence of temperature and pressure on (CIAMICIAN), 1879, A., 685.

## PHOTOCHEMISTRY—

- Spectra** of liquids (BURGER), 1879, A., 101.  
 of coloured liquids, glasses and vapours (STEIN), 1875, 412.  
 of metalloids (SCHUSTER), 1880, A., 430.  
 of ammonia (HOFMANN), 1873, 340; (SCHÖNN), 1878, A., 693.  
 of boric acid blowpipe beads (HORN), 1874, 642.  
 of carbon (WATTS), 1875, 327; (LOCKYER; LIVEING and DEWAR), 1881, A., 957; 1882, A., 251.  
 of carbonic anhydride (WESSENDONCK), 1881, A., 861; 1882, A., 253.  
 of cyanogen, inversion of (LIVEING and DEWAR), 1882, A., 1.  
 of hydrogen (VOGEL), 1880, A., 597; (FIEVEZ), 1881, A., 955; (LOCKYER), 1881, A., 956; (WÜLLNER), 1882, A., 129.  
 of hydrogen, photographed (VOGEL), 1879, A., 497.  
 of hydrogen and nitrogen, relative intensity of: its bearing on the constitution of nebulae (FIEVEZ), 1881, A., 69.  
 of the flame of hydrogen (HUGGINS), 1881, A., 957; 1882, A., 250.  
 of iodine (VOGEL), 1879, A., 190.  
 of pernitric oxide (HAUTEFEUILLE and CHAPPUIS), 1881, A., 221; (CHAPPUIS), 1882, A., 1017.  
 of nitrogen (SCHUSTER), 1873, 340.  
 in Geissler's tubes (SALET), 1876, i., 863.  
 of oxygen (VOGEL), 1879, A., 497; (PAALZOW), 1879, A., 861; (SCHUSTER), 1880, A., 430.  
 of ozone (HARTLEY), 1881, T., 57, 111; (CHAPPUIS), 1881, A., 213; 1882, A., 1017; (HAUTEFEUILLE and CHAPPUIS), 1881, A., 221.  
 of phosphoretted hydrogen (HOFMANN), 1873, 340; (SCHÖNN), 1878, A., 693.  
 of phosphoric acid blowpipe beads (HORN), 1874, 642.  
 of water (SCHÖNN), 1878, A., 693; (HUGGINS), 1881, A., 1; (LIVEING and DEWAR), 1881, A., 957; 1882, A., 251.  
 of metals (EDELMAAN), 1873, 461; (CROOKES), 1881, A., 773.  
 of metallic vapours (CROOKES), 1881, A., 957; (LIVEING and DEWAR), 1882, A., 254.



## PHOTOCHEMISTRY—

- Spectra** of metals volatilized by the oxyhydrogen flame (LOCKYER and ROBERTS-AUSTEN), 1876, ii., 156.
- of metals at the base of flames (GOUY), 1877, ii., 105.
- of salts of the metals of the iron group, and their use in analysis (VOGEL), 1876, i., 739.
- of the vapour of aluminium (LIVEING and DEWAR), 1881, A., 957; 1882, A., 254.
- of calcium (LOCKYER), 1876, ii., 35; (CIAMICIAN), 1880, A., 361.
- of the vapour of chromium (LIVEING and DEWAR), 1881, A., 957.
- of chromium salts (VOGEL), 1879, A., 190; (BAYLEY), 1880, T., 835.
- of cobalt (BAYLEY), 1880, T., 834.
- of some cobalt compounds in blow-pipe chemistry (HORNER), 1873, 1161.
- of cobalt salts (VOGEL), 1879, A., 189; (RUSSELL), 1881, A., 486, 957; 1882, A., 131.
- of copper (BAYLEY), 1880, T., 834.
- of copper sulphate (VOGEL), 1879, A., 190.
- of decipium (SORET), 1881, A., 349.
- of didymiferous minerals (COSSA), 1879, A., 697.
- of didymium nitrate (SMITH and LECOQ DE BOISBAUDRAN), 1879, A., 861.
- of erbium (LECOQ DE BOISBAUDRAN), 1873, 829.
- of erbium nitrate (LECOQ DE BOISBAUDRAN), 1879, A., 862.
- ultra-violet of the gadolinite bases (SORET), 1878, A., 629; 1879, A., 862.
- of gallium (LECOQ DE BOISBAUDRAN), 1876, i., 190, 882.
- of gold chloride (LECOQ DE BOISBAUDRAN), 1874, 217.
- of holmium (*Soret's X*) (CLEVE), 1880, A., 7; (SORET), 1880, A., 7; 1881, A., 349.
- of iron (BAYLEY), 1880, T., 834.
- of iron in the sun (LOCKYER), 1881, A., 669, 957.
- of lead (LECOQ DE BOISBAUDRAN), 1874, 217.
- of lithium (LECOQ DE BOISBAUDRAN), 1874, 217; (LIVEING and DEWAR), 1881, A., 957; 1882, A., 254.

## PHOTOCHEMISTRY—

- Spectra** of magnesium (FIEVEZ), 1881, A., 955; (LIVEING and DEWAR), 1881, A., 957; 1882, A., 254, 255.
- of magnesium salts (v. LEPEL), 1877, i., 676; (VOGEL), 1877, i., 742; ii., 269.
- of manganese salts (BAYLEY), 1880, T., 835.
- of haloid mercury compounds (PEIRCE), 1880, A., 81.
- of a solution of nickel nitrate (EISMANN), 1874, 113.
- of philippium (SORET), 1880, A., 7; (ROSCOE), 1882, T., 232.
- of potassium at low temperatures (ROSCOE and SCHUSTER), 1874, 942.
- of potassium permanganate (WIEDEMANN), 1875, 120; (v. BRÜCKE), 1878, A., 242; (VOGEL), 1879, A., 189; (CONROY), 1879, A., 425.
- of samarium (SORET), 1881, A., 349.
- of scandium (THALÉN), 1880, A., 685.
- of sodium (ABNEY), 1881, A., 862, 957.
- in Geissler's tubes (SALET), 1876, i., 863.
- at low temperatures (ROSCOE and SCHUSTER), 1874, 942.
- of strontium (CIAMICIAN), 1880, A., 361; 1882, A., 349.
- of terbium (ROSCOE and SCHUSTER), 1882, T., 283.
- of thallium (LECOQ DE BOISBAUDRAN), 1874, 217.
- of thulium (SORET; CLEVE), 1880, A., 7; (THALÉN), 1881, A., 349.
- of titanium vapour (LIVEING and DEWAR), 1881, A., 957; 1882, A., 254.
- of uranium nitrate (VOGEL), 1879, A., 189.
- of uranium salts (MORTON and BOLTON), 1874, 12; (MORTON), 1874, 642.
- of Y $\beta$  (SORET), 1881, A., 349.
- of ytterbium (LECOQ DE BOISBAUDRAN), 1879, A., 861.
- of an yttrium salt obtained from rhabdophane (HARTLEY), 1882, T., 215.
- of zirconos (HANNAY), 1873, 709.
- of carbon compounds (HARTLEY and HUNTINGTON), 1880, A., 430; (WÜLLNER), 1882, A., 130.

## PHOTOCHEMISTRY—

- Spectra**, relation between the molecular structure of carbon compounds and their (HARTLEY), 1881, T., 153; 1882, T., 45; (ABNEY and FESTING), 1881, A., 487, 957; 1882, A., 130.
- of various substances (VOGEL), 1877, ii., 269, 915.
- of hydrocarbons (HARTLEY and HUNTINGTON), 1880, A., 201.
- of acetylene (WÜLLNER), 1882, A., 129.
- of condensed benzene nuclei (HARTLEY), 1881, T., 161.
- of thallene (MORTON), 1873, 235; 1874, 14.
- of certain alkaloids (HOCK), 1882, A., 349.
- of solutions of brucine, morphine, strychnine, veratrine, and santonine in concentrated acids (MEYER), 1879, A., 269.
- of anthrapurpurin (P'ERKIN), 1873, 433.
- of colouring matters (LANDAUER), 1879, A., 101; 1881, A., 591.
- in various solvents (V. LEPEL), 1878, A., 925.
- of alizarin and of some colouring matters derived from it (ROSENSTIEHL), 1879, A., 807.
- of Magdala-red (VOGEL), 1878, A., 545.
- of  $\beta$ -nitralizarin (ROSENSTIEHL), 1879, A., 807.
- ultra-violet, of ethereal salts of nitric and nitrous acids (SORET and RILLIET), 1880, A., 202.
- of ethylic alcohol and glycerol (SCHÖNN), 1878, A., 693.
- of glucosides (HOCK), 1882, A., 349.
- of  $\alpha$ - and  $\beta$ -picolines (HARTLEY), 1882, T., 47.
- of purpurin and  $\psi$ -purpurin (ROSENSTIEHL), 1879, A., 807.
- of purpurin in alum solutions, displacement of (MORTON), 1881, A., 488.
- of pyridinedicarboxylic acids (HARTLEY), 1882, T., 46.
- of terpenes (HARTLEY and HUNTINGTON), 1880, A., 201.
- photographic, of stars (HUGGINS), 1881, A., 485, 956; 1882, A., 250.
- of 100 sun-spots observed at Kensington, reduction of observations of (LOCKYER), 1882, A., 250.

## PHOTOCHEMISTRY—

- Spectra** of the electric spark (ABT), 1879, A., 765.
- of Sell's disulphide of carbon lamp (VOGEL), 1875, 603.
- of light of exploding gun-cotton (LOHSE), 1875, 119.
- of noble opal (BEHRENS), 1874, 557.
- of vegetable oils (HARTLEY and HUNTINGTON), 1880, A., 202; 1881, A., 957; 1882, A., 130.
- of petroleum (SCHÖNN), 1878, A., 693.
- of ultramarine (WUNDER), 1876, i., 864.
- of chlorophyll (CHAUTARD), 1873, 341, 521, 582, 713, 996, 997, 1258; 1874, 643; 1875, 171; (MILLARDER), 1873, 996; (RUSSELL and LAPRAIK), 1882, T., 334.
- of blood pigments (GAENGE), 1876, ii., 646; (VOGEL), 1877, i., 331.
- of the alcoholic solution of hydrobilverdin (THUDICHUM), 1876, ii., 28.
- Heat spectra** (AYMONNET), 1876, ii., 374.
- of solar light and of the lime light (LAMANSKY), 1873, 349.
- Fluorescent spectra** (LAMANSKY), 1881, A., 214.
- of the salts of the rare earths (SORET), 1879, A., 862.
- Phosphorescent spectra**, discontinuous, in high vacua (CROOKES), 1881, A., 773, 957; 1882, A., 445.
- Urochrome spectra** (THUDICHUM), 1875, 398.
- Solar spectrum**, experimental researches on the (LOCKYER), 1873, 340, 994; 1874, 495.
- new theory of the (DRAPER), 1878, A., 101.
- dark lines in the, on the less refrangible side of (DRAPER), 1880, A., 201.
- dark lines of the, and the constitution of the sun (CORNU), 1878, A., 357.
- presence of dark lines in the, which closely correspond with the lines of the spectrum of oxygen (DRAPER), 1879, A., 997.
- cause for the appearance of bright lines in the (MELDOLA), 1879, A., 574.
- photographic method of mapping the least refrangible end of the, with a map of the solar spectrum from 7,600 to 10,750 (ABNEY), 1881, A., 957.

## PHOTOCHEMISTRY—

- Solar spectrum**, photograph of the ultra-red portion of the (ABNEY), 1880, A., 429.  
 ultra-violet limit of the (CORNU), 1879, A., 861.  
 telluric rays of the (EGOROFF), 1881, A., 1091.  
 measurement of the intensity of some obscure rays of the (GOUY), 1881, A., 333.  
 observations on a group of rays in the (THOLLON), 1881, A., 333.  
 rays in the, produced by atmospheric absorption (THOLLON), 1881, A., 1.  
 chemical action of the, absorption, and anomalous dispersion, relations between (VOGEL), 1874, 1121.  
 variations in the chemical actions of the, and an apparatus for measuring them (VOGEL), 1874, 424.  
 chemical action of the, on the haloid salts of silver (VOGEL), 1874, 756; 1875, 326.  
 sensitiveness of silver bromide dry plates for different portions of the (VOGEL), 1881, A., 773.  
 decomposition of carbonic acid in the, by the green parts of plants (TIMIRIAZEFF), 1874, 285; 1877, ii., 635.  
 region of the, indispensable to vegetable life (BERT), 1879, A., 336.  
**Spectroscope**, pocket, new universal stand for use with the (V. LEPEL), 1879, A., 574.  
 universal (VOGEL), 1878, A., 829.  
 improvement in the construction of (MADAN), 1875, 39.  
 with monochromatic light (ZENGER), 1882, A., 677.  
 improved slit for (KRÜSS), 1882, A., 1229.  
**Spectrosodiometer** (CHAMPION, PELLET and GRENIER), 1873, 934.  
**Electrospectrum tube** (DELACHANAL and MERMET), 1874, 1125; 1876, ii., 35.  
**Euthyoptic spectroscope**, simple (KESSLER), 1875, 38.  
**Spectrum analysis** (CHAMPION, PELLET and GRENIER), 1873, 934; (JANSSEN), 1873, 1258; (HENNIG), 1874, 495; (BUNSEN), 1876, i., 665; (SETTEGAST), 1879, A., 828.

## PHOTOCHEMISTRY—

- Spectrum analysis**, peculiarities observed during researches on (LECOQ DE BOISBAUDRAN), 1873, 1257.  
 estimation of the composition of alloys by means of (LOCKYER and ROBERTS-AUSTEN), 1874, 495.  
 discrimination of anthracenes by means of (NICKELS), 1880, A., 292, 757.  
 detection of colouring matters in wine, by means of (VOGEL), 1876, i., 740; (V. LEPEL), 1878, A., 168; (MACAGNO), 1881, A., 852.  
 detection of hæmoglobin by means of (LANKESTER), 1873, 398.  
 estimation of the amount of hæmoglobin in human blood by means of (WISKEMANN), 1877, ii., 808.  
 detection of minute quantities of hydrocarbon in a gaseous mixture by means of (A. and G. DE NEGRI), 1876, ii., 659.  
 estimation of alumina by means of (VOGEL), 1877, i., 742.  
 estimation of lithium by means of (TRUCHOT), 1874, 1072; (BALLMAN), 1876, ii., 550.  
 estimation of nitric acid by means of (SETTEGAST), 1879, A., 829.  
**Photogalvanography** (LEIPOLD), 1876, i., 118.  
**Photography**. See under Photochemistry.  
**Photolithography** (ANON.), 1873, 948; (PAUL), 1874, 1020; (OTT), 1879, A., 836.  
 ink for (TOOVEY), 1882, A., 114.  
**Photosantonio acid** and its salts (SESTINI), 1877, i., 471; 1880, A., 104; (SESTINI and DANESI), 1882, A., 627.  
**Photostereotyping** (FINK), 1874, 930, 1020.  
**Phototypography**, ink for (TOOVEY), 1882, A., 114.  
**Phrenosin**. See Cerebrin under Glucosides.  
**Phthalanil**. See Phenylphthalimide.  
**Phthalanilic acid**. See Phenylphthalamic acid.  
**Phthalein-orcein**. See Orcinolphthalein.  
**Phthaleins**, formation of, from phthalic acid (V. BAEVER and CARO), 1875, 66.  
 of tertiary aromatic bases (FISCHER), 1877, i., 465; ii., 607.

**Phthalethylhydroxylamine** (LASSAR-COHN), 1881, A., 586.

**Phthalic acid** (HESSERT), 1878, A., 66.  
formation of, by oxidation of naphthaquinone (LIEBERMANN and DITTLER), 1873, 1233.

formation of, by heating anthraquinone with fuming sulphuric acid (WEITH and BINDSCHEDLER), 1875, 162.

oxidation of *o*-toluic acid to (WEITH), 1875, 73.

preparation of (DURAND), 1878, A., 455.

synthesis of (GUYARD), 1878, A., 796.

action of, on quinol (v. BAEYER and CARO), 1875, 68.

conversion of, into salicylic acid (LASSAR-COHN), 1881, A., 585.

some derivatives of (MILLER), 1882, A., 404.

compounds of, with phenols (v. BAEYER), 1877, i., 195; 1880, A., 650.

calcium salt of, products of the dry distillation of (MILLER), 1880, A., 255.

**Phthalic acid**, 3-amido- (v. BAEYER, BÜHRIG, and KOENIGS), 1877, ii., 336.

4-chloro-, and its salts (CLAUS and DEHNE), 1882, A., 734.

trichloro-, and its anhydride (ATTERBERG and WIDMAN), 1878, A., 322.

tetrachloro- (CLAUS and SPRUCK), 1882, A., 1210.

trichloronitro- (WIDMAN), 1879, A., 723.

3- and 4-nitro- (MILLER), 1878, A., 504; 1882, A., 404.

3-nitro- (D'AGUIAR), 1873, 174; (BEILSTEIN and KURBATOFF), 1879, A., 722; 1882, A., 63.

obtained by oxidation of nitronaphthalene (BEILSTEIN and KURBATOFF), 1879, A., 644.

action of hydriodic and hydrobromic acids on (BEILSTEIN and KURBATOFF), 1879, A., 644, 722.

3:5-dinitro-, and its salts (BEILSTEIN and KURBATOFF), 1880, A., 478; 1881, A., 436; 1882, A., 63.

**isoPhthalic acid** (*m-phthalic acid*) (KRINOS), 1878, A., 231; (FITTIG and LIEPMANN), 1879, A., 536.

from benzenedisulphonic acid (MEYER and MICHLER), 1875, 1026.

formation of, by the action of sodium formate on benzoic acid (v. RICHTER), 1873, 1238.

**isoPhthalic acid** (*m-phthalic acid*), formation of, by oxidation of colophony (SCHREDER), 1873, 889; 1874, 794.

some derivatives of (BEYER), 1881, A., 96; 1882, A., 1294.

**p-Phthalic acid**. See Terephthalic acid.

**Phthalic anhydride**, vapour-density of (TROOST), 1879, A., 1025.

melting point of (ANSCHÜTZ), 1878, A., 136.

action of, on aromatic diamines (BIEDERMANN), 1877, ii., 783.

action of, on naphthalene (ABOR and CRAFTS), 1879, A., 940.

action of sodium acetate on a mixture of isobutyric acid and (GABRIEL and MICHAEL), 1879, A., 246.

action of sodium acetate on a mixture of phenylacetic acid and (GABRIEL and MICHAEL), 1878, A., 735.

action of, on *o*-tolylenediamine (LADENBURG), 1877, ii., 753.

acids formed by the action of xylene and its homologues on (MEIER), 1882, A., 848.

compounds of, with hydrocarbons of the benzene series (FRIEDEL and CRAFTS), 1881, A., 731.

condensation-products (GABRIEL), 1881, A., 733.

**Phthalic anhydride**, 3-bromo- (SMITH), 1879, T., 792.

4-chloro- (CLEVE), 1878, A., 736.

trichloro- (ATTERBERG and WIDMAN), 1878, A., 322.

thio- (SCHREDER), 1874, 990.

**Phthalic chloride** (v. GERICHTEN), 1880, A., 473.

**isoPhthalic sulphinide**. See Sulph-amidoisophthalic anhydride.

**Phthalide** (v. BAEYER), 1877, ii., 332; (HESSERT), 1878, A., 66, 419.

melting point of, and action of alkalis on (HESSERT), 1878, A., 66.

action of phosphorus pentachloride on (v. GERICHTEN), 1880, A., 473.

$\omega$ -hydroxy-*o*-toluic acid from (HESSERT), 1878, A., 66.

nitro- (BEILSTEIN and KURBATOFF), 1879, A., 722.

**Phthalimide**, and its salts (KUHARA), 1881, A., 1039; (PIUTTI), 1882, A., 1297.

base from (GABRIEL), 1881, A., 263.

**Phthalimidobenzoic acids**, *o*- and *m*- (GABRIEL), 1879, A., 324.

**Phthalin** of fluorescein chloride. See Phenolphthalin dichloranhydride.

**Phthalobenzanilide** (DOEBNER), 1882, A., 508.



- Phthalobisdiphenylamine** (LELLMANN), 1882, A., 1060.
- Phthalocarbamic acid.** See Phthaluramic acid.
- Phthalocarbamide** (*phthaluride*) (PIUTTI), 1882, A., 1298.
- Phthalohydroxylamine** (*hydroxylphthalamic acid*) and its salts, and the action of potash on (LASSAR-COHN), 1881, A., 585.
- Phthalomesidide** (EISENBERG), 1882, A., 956.
- iso***Phthalonitrile.** See Benzene, *m-dicyano*.
- Phthalophenones**, *o*- and *p*- ( $\alpha$ - and  $\beta$ -*dibenzoylbenzenes*) (ZINCKE), 1876, i., 703; (WEHNEN), 1876, i., 916.
- iso***Phthalophenone** (*m-phenylene diphenyl diketone*) and its salts (ADOR), 1880, A., 470.
- $\alpha$ - and  $\beta$ -*diamido*- and *-dinitro*- (ADOR), 1880, A., 470.
- Phthalophenone.** See also Diphenylphthalide.
- iso***Phthalosulphonic acid.** See Sulphoisophthalic acid.
- Phthalothiouamic acid** (*phthalothiocarbamic acid*) (PIUTTI), 1882, A., 1298.
- Phthaluramic acid** (PIUTTI), 1882, A., 1298.
- Phthalureide.** See Phthalocarbamide.
- Phthalyl**, the radicle of phthalic acid (ADOR), 1873, 392.
- Phthalyl alcohol.** See Phthalylpinacone.
- Phthalylacetamide** (GABRIEL and MICHAEL), 1878, A., 230.
- Phthalylacetic acid** and its derivatives (GABRIEL and MICHAEL), 1877, ii., 486; 1878, A., 229, 426, 734.
- constitution of (GABRIEL), 1881, A., 733.
- action of sulphuric acid on (GABRIEL and MICHAEL), 1878, A., 230.
- Phthalylbromacetic acid** (GABRIEL and MICHAEL), 1878, A., 426.
- Phthalylpinacone** (HESSERT), 1878, A., 67.
- Phthalylpiperidine** (SCHIFF), 1880, A., 127.
- $\alpha$ -**Phthalylpropionamide** (GABRIEL and MICHAEL), 1878, A., 735.
- $\alpha$ -**Phthalylpropionic acid**, and its derivatives (GABRIEL and MICHAEL), 1878, A., 735; 1879, A., 245.
- Phthalyltropine** (LADENBURG), 1880, A., 411, 715.
- Phyllie acid** a new substance contained in the leaves of certain plants (BOUGAREL), 1877, ii., 905.
- Phyllite** (*sericite-gneiss*) (v. GÜMBEL), 1879, A., 207.
- Phyllocyanic acid**, Fremy's (GAUTIER), 1880, A., 266.
- Phyllocyanin**, oxidation, and distillation of (SACHSSE), 1877, ii., 208; 1882, A., 69, 412.
- as a reagent (PELLAGRI), 1877, i., 109.
- Phylloxanthin** (GAUTIER), 1880, A., 266.
- Phylloxera.** See under Agricultural Chemistry.
- Physiological action**, connection between chemical constitution and (SALKOWSKI), 1876, i., 949.
- connection between isomorphism, molecular weight, and (BLAKE), 1875, 96; 1881, A., 629; 1882, A., 879.
- of alcohols (DUJARDIN-BEAUMETZ and AUDIGÉ), 1876, i., 92.
- of alkali salts (WOLBERG), 1881, A., 752, 834.
- of ammonium salts (LANGE), 1876, i., 723; (RICHER and MOUTARD-MARTIN), 1882, A., 760.
- of amylammonium chloride (DUJARDIN-BEAUMETZ), 1874, 174.
- of arsenic (BINZ and SCHULZ), 1880, A., 174; 1882, A., 242; (DOGIEL), 1882, A., 987; (SCHULZ), 1882, A., 1223.
- of barometric pressure (BERT), 1873, 643, 762, 1249; (v. LIEBIG), 1875, 1273.
- of beer (FLEISCHER), 1881, A., 752.
- of benzenecarsonic acid (SCHULZ), 1879, A., 476.
- of beryllium (BLAKE), 1882, A., 701.
- of borax (DE CYON; LE BON), 1880, A., 415; (GRUBER), 1880, A., 907; 1881, A., 453; (WOLBERG), 1881, A., 834.
- of caffeine (ROUX), 1873, 1152; (RABUTEAU), 1873, 1248.
- of carbon monoxide (BERT), 1873, 1249; (GRUBER), 1881, A., 1086.
- of carbon monoxide, coal and illuminating gases (POLECK and BIEFEL), 1878, A., 906; 1881, A., 853.
- of carbon tetrachloride (MOREL), 1877, ii., 912.
- of trichloroacetic acid (TOMASZEWICZ), 1874, 814.
- of chloral (BYASSON), 1874, 591; (TOMASZEWICZ), 1874, 814.
- of chloromethylethylglyoxaline (WALLACH), 1874, 984.
- of cotarnine and hydrocotarnine (PIERCE), 1875, 585; 1876, i., 170.

**Physiological action of curare poison** (COLASANTI), 1878, A., 526.  
 of diphenylarsinic acid (SCHULTZ), 1879, A., 476.  
 of emetine and eserine (PANDER), 1873, 79.  
 of ethylic alcohol (BINZ), 1873, 518; (FLEISCHER), 1881, A., 752.  
 of 3-ethylpyridine (WILLIAMS and WATERS), 1881, A., 1058.  
 of ferric chloride (RABUTEAU), 1873, 398.  
 of fungi (GRAWITZ), 1881, A., 930.  
 of gelsemium (WORMLEY), 1882, A., 1109.  
 of glycerol (PLÓSZ), 1878, A., 525; (LEWIN), 1880, A., 817.  
 of hydroxylamine (RAIMONDI and BERTONI), 1882, A., 1222, 1231.  
 of hypophosphites (PAQUELIN and JOLLY), 1878, A., 994.  
 of lactic acid (HEITZMANN), 1874, 593; (SIEDAMGROTZKY and HOFMEISTER), 1880, A., 905.  
 of malt liquors (COLEMAN), 1878, A., 905; (EMKEN), 1881, A., 752.  
 of methylethylglyoxaline and its chloro-derivative (SCHULZ), 1881, A., 246.  
 of morphine derivatives (MAYER and WRIGHT), 1873, 211, 228; (PIERCE), 1874, 1043.  
 of the extract of *Nerium odorum* (GREENISH), 1881, A., 916.  
 of nitrogen monoxide (JOLYET and BLANCHE), 1873, 1154; (NÜSSBAUM), 1874, 996.  
 of nitrogen dioxide (GIACOSA), 1879, A., 817.  
 of *p*-nitrotoluene (JAFFÉ), 1875, 478.  
 of oxygen (BERT), 1873, 643, 762, 1249; 1878, A., 594; (NENCKI and SIEBER), 1882, A., 1307.  
 of papain (ROSSBACH), 1882, A., 1309.  
 of phenylacetic and phenylpropionic acids (E. and H. SALKOWSKI), 1879, A., 662.  
 of ortho- and meta-phosphoric acids (ORÉ), 1876, i., 725.  
 of phosphorus (SELM), 1881, A., 309.  
   See also Phosphorus poisoning.  
 of potassium salts (BUNGE), 1873, 1042; 1879, A., 816; (DEHN), 1876, ii., 535.  
 of potassium bromide and sodium chloride (BILL), 1877, i., 731.  
 of potassium iodate (MELSENS), 1873, 398.  
 of pumpkin-seeds (HILLE), 1879, A., 1046.

**Physiological action of pyridine bases** (MCKENDRICK and DEWAR), 1875, 1276.  
 of pyrogallol (BOVET), 1880, A., 73.  
 of quinic acid (RABUTEAU), 1873, 398.  
 of quinine (KERNER), 1873, 647.  
 of quinine iodate and bromate (CAMERON), 1882, A., 879.  
 of quinoline borate (DE VRIJ), 1881, A., 1154.  
 of quinoline (DONATH), 1881, A., 298; 1882, A., 214.  
 of quinoline-bases (MCKENDRICK and DEWAR), 1875, 1276.  
 of sarcosine (SCHIFFER), 1882, A., 78.  
 of sodium nitrite (GIACOSA), 1879, A., 817.  
 of sodium silicate (RABUTEAU and PAPILLON), 1873, 85, 400; (PICOT), 1873, 294.  
 of sulphur (REGENSBURGER), 1877, ii., 911.  
 of tetramylammonium and tetramethylammonium iodides (RABUTEAU), 1873, 763.  
 of tri- and tetra-morphine (MAYER and WRIGHT), 1873, 224.  
 of thymol (PESCHECHONOFF), 1874, 997.  
 of impure water (EMMERICH), 1880, A., 488.  
 of wine (FLEISCHER), 1881, A., 752.  
 of adulterated wine (SCHMITZ), 1880, A., 174.  
 of zinc (MATZKEWITSCH), 1878, A., 593.  
 See also Poisons, Poisoning and Toxicological observations.  
**Physiological combustion** in living organisms (PFLÜGER), 1875, 1040.  
**Physiological investigations**, employment of compressed oxygen in (BERT), 1878, A., 236.  
**Physometer**, a new instrument for determining variable volumes of air and other gases (HARTING), 1873, 349, 590.  
**Physostigmine**. See Eserine under Alkaloids.  
*Phytolacca decandra*, constituents of the root of (EHRHARD), 1880, A., 412.  
   colouring matter of (HILGER and BISCHOFF), 1879, A., 730.  
*Phytolacca dioica*, composition of (BALLARD), 1881, A., 1151.  
**Phytolacca juice**, detection of, in wine (GAUTIER), 1876, ii., 330, 428; 1877, ii., 936.

- Phytolaccic acid** (TERREIL), 1881, A., 286.
- Phytolaccin** (CLAASSEN), 1880, A., 412.
- Phytosterin** (*phytosterol*) (HESSE), 1878, A., 850.  
from *Ethaliium septicum* (HESSE), 1882, A., 729.
- Picamar.** See Hydroxydimethoxypropylbenzene.
- Picene** (BURG), 1881, A., 179; (GRAEBE and WALTER), 1881, A., 284.  
*di*bromo- (BURG), 1881, A., 179.
- Picenequinone** (BURG), 1881, A., 179.
- Picite** (NIES), 1881, A., 525; (STRENG), 1881, A., 528.
- Picoline** (*methylpyridine*), and its derivatives and reactions (RAMSAY), 1879, A., 262.  
heat of formation of (RAMSAY), 1879, T., 696.
- $\alpha$ -Picoline** (*2-methylpyridine*), physical properties of (THORPE), 1880, T., 222.
- Picolines**,  $\alpha$ - and  $\beta$ - (WEIDEL), 1880, A., 269.  
spectrum of (HARTLEY), 1882, T., 47.
- Picoline-4-carboxylic acid** (*2-methylpyridine-4-carboxylic acid*) (BÖTTINGER), 1881, A., 612.
- Picolinic acid** (*2-pyridinecarboxylic acid*) (WEIDEL), 1880, A., 268.
- Picraconine** (WRIGHT and LUFF), 1878, T., 332.
- Picraconitine** (WRIGHT), 1877, i., 146.  
action of saponifying agents on, and decomposition-products of (WRIGHT and LUFF), 1878, T., 332.
- Picramic acid** (*4:6-dinitro-2-amidophenol*) (STUCKENBERG), 1877, ii., 474.  
action of cyanogen on (GRIESS), 1882, A., 969.  
action of soda solution on (TRÜMPLER), 1879, A., 717.  
salts of, as a test for acids and alkalis (FRÉBAULT), 1877, i., 344.
- Picramide** (*2:4:6-trinitraniline*) (SALKOWSKI), 1875, 366.  
action of ammonium sulphide on (NORTON and ELLIOTT), 1878, A., 417.
- Picramide aniline** (MERTENS), 1878, A., 725; (HEPP), 1879, A., 51.
- Picramide dimethylaniline** and *p*-toluidine (MERTENS), 1878, A., 725.
- Picranalcime.** See Alalcite.
- Picric acid** (*2:4:6-trinitrophenol*), action of, on oil of peppermint (FRÉBAULT), 1874, 1172.  
wool and cloth dyed green with (HAUSNER), 1877, ii., 243.
- Picric acid** (*2:4:6-trinitrophenol*), compound of, with ethylcarbazole (GRAEBE and v. ADLERSKRON), 1880, A., 660.  
compound of, with methoxynaphthalene (HANTZSCH), 1880, A., 813.  
physical and chemical properties of the salts and ethers of (POST and MEHRTEENS), 1876, i., 579.  
ammonium salt of, heat of formation of (SARRAU and VIEILLE), 1881, A., 969.  
lithium salt of (BEAMER and CLARKE), 1879, A., 789.  
potassium salt of, heat of formation of (SARRAU and VIEILLE), 1881, A., 969.  
decomposition of (SARRAU and VIEILLE), 1881, A., 1033.  
detection of, in beer (ANON.), 1874, 400; (BRUNNER), 1874, 1017; (VITALI), 1877, ii., 232.
- Picrite-porphyr** of Steierdorf in the Banat (HUSSAK), 1882, A., 587.
- Picrites** of Nassau (ANGELBIS), 1881, A., 387.
- Picroalumogen** (ROSTER), 1878, A., 280.
- Picropharmacolite** (FRENZEL), 1874, 445; (SALKOWSKI), 1880, A., 216.
- Picropodophyllic acid** and **picropodophyllin** (PODWYSZOZKI), 1882, A., 976.
- Picroroccellin** (STENHOUSE and GROVES), 1877, i., 718.
- Picrosclerotin** (DRAGENDORFF), 1878, A., 518; (BLUMBERG), 1879, A., 270, 387.
- Picrosmine** (FRENZEL), 1882, A., 473.
- Picrotephroite** from Långban (PAJUKULL), 1879, A., 32.
- Picrotin** (BARTH and KRETSCHY), 1881, A., 286; (PATERNO and OGIALORO-TODARO), 1881, A., 440; (SCHMIDT and LÖWENHARDT), 1881, A., 740.
- Picrotoxic acid**, hydrate of, preparation of (PATERNO and OGIALORO-TODARO), 1879, A., 729.
- Picrotoxin** (BÖHNKE-REICH), 1873, 643; (APJOHN), 1876, ii., 533; (PATERNO and OGIALORO-TODARO), 1877, i., 719; ii., 790; 1879, A., 729; 1881, A., 440; (BARTH and KRETSCHY), 1881, A., 286; (SCHMIDT and LÖWENHARDT), 1881, A., 740.  
composition of (BARTH and KRETSCHY), 1882, A., 412.  
action of acetic anhydride, sodium acetate and bromine on (PATERNO and OGIALORO-TODARO), 1879, A., 729.

- Picrotoxin** and some of its derivatives, characteristic reactions of (OGLIALORO-TODARO), 1879, A., 748.  
solubility of, in chloroform (NOWAK), 1873, 412, 535.  
detection of, in beer (BLAS), 1873, 94.
- Picrotoxinin** (PATERNO and OGLIALORO-TODARO), 1881, A., 440; (SCHMIDT and LÖWENHARDT), 1881, A., 740.
- Picryl-*m*- and -*p*-nitranilines** (AUSTEN), 1875, 165; 1877, ii., 756.
- Picrylnitraniline**. See also Diphenylamine, *tetranitro*-.
- Picrylpicrylamine**. See Dipicrylamine.
- Piedmontite** (*manganese epulote*) (RAMMELSBERG), 1874, 547.
- Piezometer** (BUCHANAN), 1878, T., 448.
- Pig**. See under Agricultural Chemistry.
- Pig iron**. See Cast iron under Iron.
- Pigeons' dung** (WEIN), 1881, A., 121.
- Pigment** found in the sarcophagus of St. Ambrose at Milan (BIZIO), 1873, 657.  
chemical investigation of twelve, found at Pompeii (PALMERI), 1877, i., 111.  
green, from barium chromate (DOUGLAS), 1879, A., 987.  
baryta-green as a (FLEISCHER), 1874, 1116; (ANON.), 1876, i., 128.  
bile-. See Bile.  
blood-. See Blood.  
of egg-yolk (MALY), 1882, A., 76.  
of the emerald (WILLIAMS), 1874, 28.  
from hair and feathers, black colouring matter contained in (HODGKINSON and SORBY), 1877, i., 427.  
brown, black, and red, from iron scrap (R. and C. STEINAU), 1879, A., 97.  
of the skin of the negro, chemical character of the (FLOYD), 1877, i., 329.  
thallium (SALTER), 1878, A., 454.  
urinary. See Urine.  
new mineral white (PHIPSON), 1878, A., 1017.  
for floors, wood, stone and brickwork (MARECK), 1881, A., 483.  
for paper staining (ANON.), 1875, 923.
- Pigmentum nigrum**, the black colouring matter contained in hair and feathers (HODGKINSON and SORBY), 1877, i., 427.
- Pilarite**, a new mineral of the chrysocolla group (KRAMBERGER), 1882, A., 582.
- Pile**. See under Electrochemistry.
- Pilinite** (V. LASAULX), 1877, i., 54.
- Pilocarpine** from jaborandi (HOLMES), 1875, 1269; (KINGZETT), 1876, ii., 367; 1877, ii., 907; (HARNACK and MEYER), 1880, A., 898; (V. POEHL), 1881, A., 447.  
formula of (CHASTAING), 1882, A., 75.  
action of acids on (CHASTAING), 1882, A., 1115.  
action of potash on (CHASTAING), 1882, A., 744.  
and its salts, examination of (CHRISTENSEN), 1882, A., 317.
- Pimaric acid** (CAILLIOT), 1875, 457; (BRUYLANTS), 1877, ii., 341.  
calcium salt of, products of the dry distillation of (BRUYLANTS), 1878, A., 504.
- Pimelic acid** (*isopropylsuccinic acid*) (ROSER), 1882, A., 717; (WALTZ), 1882, A., 948.  
synthesis of (BAUER and SCHULER), 1878, A., 294.
- $\alpha$ -Pimelic acid** (DALE and SCHORLEMMER), 1879, T., 686.  
crystalline forms of (BURGHARDT), 1874, 937.  
barium, calcium and silver salts of (DALE and SCHORLEMMER), 1879, T., 686.
- Pimelic chloride** (KACHLER), 1874, 155.
- Pin**, Incas, found on mummy at Arica, Peru, composition of (FLIGHT), 1882, T., 145.
- Pinacolic alcohol** (*sec.-hexylic alcohol*; *methyl-tert.-butylcarbinol*) (FRIEDEL and DA SILVA), 1873, 488.
- Pinacolin** (*methyl tert.-butyl ketone*), constitution of (BUTLEROFF), 1874, 245, 1081; 1875, 444; (PAWLOFF), 1878, A., 966.  
from methyl ethyl ketone (LAWRINOWITSCH), 1877, ii., 427.
- Pinacolins** (THÖRNER), 1876, ii., 197; 1877, i., 464; 1878, A., 68; (THÖRNER and ZINCKE), 1878, A., 223, 425, 874; 1879, A., 317; 1880, A., 646.
- Pinacone** from methyl ethyl ketone (LAWRINOWITSCH), 1876, i., 897; 1877, ii., 427.  
chemical structure of (PAWLOFF), 1878, A., 562; 1879, A., 536.  
heat of combustion of (LUGININ), 1882, A., 356, 568.  
action of dilute sulphuric acid on (PAWLOFF), 1878, A., 966.  
See also Hexylene glycol.
- Pinacones** (THÖRNER and ZINCKE), 1878, A., 223, 425, 874; 1879, A., 317; 1880, A., 646.



- Pine-leaves, examination of, at different stages of their growth (DULK), 1875, 1282.
- Pines, effect of manures on the growth of (HESS; HAMPEL), 1880, A., 509.
- Piney tallow. See *Vateria indica*.
- Pinguite (KENNGOTT), 1879, A., 31.
- Pinite from Elba (GRATTAROLA), 1878, A., 119.
- $\beta$ -Pinite (*matezite*), a sugar from Madagascar caoutchouc (GIRARD), 1874, 169.
- Pinitoid from Gleichlinger Fels in the Fichtelgebirge, composition of (HILGER), 1880, A., 857.
- Pink, garden, ash of the (ANDREASCH), 1879, A., 338.
- Pinoline (ANON.), 1873, 305.
- Pinus Pinaster*, influence of the chemical composition of the soil on the growth of (FLICHE and GRANDEAU), 1874, 382.
- Pinus pumilio*, ethereal oil of (ATTERBERG), 1882, A., 410.
- Pinus sylvestris*, oil of (TILDEN), 1878, T., 80.
- Pioscope, Heeren's (ANON.), 1881, A., 946; (DANGERS), 1882, A., 559.
- Piperethyalkamine. See Hydroxyethylpiperidine.
- Piperhydonic acid, tetrabromo- (FITTIG and MIELCK), 1874, 897.
- Piperic acid, constitution of (FITTIG and MIELCK), 1874, 897.  
reactions of the ammonium salt of (LORENZ), 1881, A., 728.
- Piperide, dibromo- (FITTIG and MIELCK), 1874, 898.
- Piperidine (*hexahydropyridine*) (v. HOFMANN), 1879, A., 733; (SCHIFF), 1880, A., 127.  
constitution of (v. HOFMANN), 1881, A., 621.  
conversion of, into pyridine (KOENIGS), 1880, A., 404.  
derivatives of (SCHOTTEN), 1882, A., 982.  
salts (HIORTDAHL), 1880, A., 54.  
hydrochloride, action of bromine on (v. HOFMANN), 1879, A., 733.  
nitroso- (SCHOTTEN), 1882, A., 983.  
reduction of (KNORR), 1882, A., 1115.
- Piperidyl- $\alpha$ -alanine (BRÜHL), 1876, i., 699.
- Piperidylhydrazine, and its hydrochloride (KNORR), 1882, A., 1115.
- Piperidylurethane (SCHOTTEN), 1882, A., 983.
- Piperyne. See under Alkaloids.
- Piperno (KALKOWSKY), 1881, A., 699.
- Piperonal and its derivatives (LORENZ), 1881, A., 727.  
vapour-density of (KNECHT), 1877, ii., 894.  
action of aniline on (LORENZ), 1881, A., 729.
- Piperonylic acid (FITTIG and REMSEN), 1873, 1143; (v. JOEST and HESSE), 1878, A., 733.  
nitro- (*nitromethyleneproteocatechuic acid*) (v. JOEST and HESSE), 1878, A., 733.
- Piperpropylalkamine. See Hydroxypropylpiperidine.
- Piperpropylglycoline. See Dihydroxypropylpiperidine.
- Piperylene. See Pentinene.
- Piperylpiperidine. See Piperine under Alkaloids.
- Pipturus argenteus*, examination of (MOELLER), 1879, A., 860.
- Pirylene (SCHOTTEN), 1882, A., 983.  
from dimethylpiperidine (LADENBURG), 1882, A., 983.
- Pistacia Lentiscus*, essential oil of (FLÜCKIGER), 1882, A., 208.
- Pitch from coal, composition and properties of (BEHRENS), 1873, 419.
- Pitchblende. See Uraninite.
- Pittacal. See Eupittonic acid.
- Pitticite (*iron-sinter*) (FRENZEL), 1874, 445.
- Pivalic acid. See Valeric acid.
- Placodin (*nickel-speciss*) (BRAUN), 1881, A., 228.
- Plagiocitrite (SINGER), 1881, A., 369.
- Plagioclase, granular, in the limestone-strata of Geppersdorf (SCHUMACHER), 1879, A., 903.  
basalts (HARTMANN), 1879, A., 903.
- Plagioclases, optical orientation of (SCHUSTER), 1881, A., 397.
- Plant. See under Agricultural Chemistry.
- Plantain. See under Agricultural Chemistry.
- Plasma-albumin (v. VOIR), 1873, 285.
- Plaster, causes which may modify the setting of (LANDRIN), 1875, 106.  
and lime, new cements of (LANDRIN), 1875, 106.
- "Plaster" in wines. See under Wine.
- Plastilina (GIESEL), 1878, A., 454.
- Plastin (RODEWALD and REINKE), 1881, A., 753.
- Plating and gilding solutions, composition of (ALLEN), 1877, ii., 224.
- Platinic bromide and chloride. See Platinum tetrabromide and tetrachloride.
- Platinochlorides (*chloroplatinates*) (HESSE), 1881, A., 922.

**Platinochlorides** (*chloroplatinates*), recovery of platinum from (DUVILLIER), 1877, ii., 574.  
 action of silver nitrate on (JÖRGENSEN), 1878, A., 200.

**Platinocyanides**, double organic (SCHOLZ), 1881, A., 707.

**Platinoiodonitrites** (NILSON), 1878, A., 706.

**Platinomolybdates** (GIBBS), 1877, ii., 848.

**Platinonitrous acid** and its salts (NILSON), 1878, A., 274.

*tri***Platino-octonitrous acid** (NILSON), 1877, ii., 711.

**Platinonitrites** (NILSON), 1877, ii., 115; 1878, A., 274.  
 action of iodine and alcohol on (NILSON), 1877, ii., 710.

**Platinosemidiammonium chloride** (JÖRGENSEN), 1878, A., 200.

**Platinosobromides** (*bromoplatinites*) (THOMSEN), 1877, ii., 276.

**Platinosochlorides** (*chloroplatinites*) (NILSON), 1877, i., 49; ii., 277; (THOMSEN), 1877, ii., 276.

**Platinotungstic acid** and its salts (GIBBS), 1877, ii., 848.

**Platinum** from Mexico (BURKART), 1875, 551; (v. SANDBERGER), 1876, i., 54.  
 geological occurrence of, in Russia (ANON.), 1881, A., 769.  
 from the Ural Mountains (TERREIL), 1876, ii., 386; (KERN), 1877, ii., 177.  
 atomic weight of (SEUBERT), 1881, A., 514.  
 recovery of, from platinochlorides (DUVILLIER), 1877, ii., 574.  
 preparation of (ANON.), 1876, ii., 176; (MATTHEY), 1879, A., 772; 1881, A., 792.  
 incandescent radiation from (VIOLE), 1879, A., 573; 1881, A., 669.  
 galvanic polarisation of (v. HELMHOLTZ), 1873, 463; (EXNER), 1879, A., 578.  
 charged with free chlorine, electromotive force of (MACALUSO), 1874, 1044.  
 incandescent, electrical resistance and coefficient of expansion of (NICHOLS), 1882, A., 354.  
 heat of fusion of (VIOLE), 1878, A., 106.  
 fusion of, in a small wind furnace (VIOLETTE), 1873, 477.  
 specific gravity of pure (SAINTE-CLAIRE DEVILLE and DEBRAY), 1876, i., 523.

**Platinum**, affinities developed during the slow oxidation of hydrogen and carbonic oxide by (v. MEYER), 1876, ii., 40.  
 penetration and permeation of, by electrolytic gases (v. HELMHOLTZ), 1877, ii., 161, 271.  
 volatility of, in chlorine (SEELHEIM), 1880, A., 94.  
 catalytic action of (v. MEYER), 1876, ii., 486.  
 certain chemical effects of oxygenised (SKEY), 1876, ii., 609; 1877, ii., 710.  
 changes in the surface of, produced by oxygen polarisation (KOCH), 1879, A., 1005.  
 condensation of air on the surface of (SMITH), 1875, 480.  
 action of fused alkali carbonates on (DE KONINCK), 1880, A., 581.  
 action of, on coal-gas (WILM), 1881, A., 706.  
 action of flame on (RÉMONT), 1881, A., 882.  
 action of, on hydrocarbons (CŒQUILLION), 1873, 1214; 1875, 1188; 1879, A., 302.  
 action of sulphuric acid on (SCHEURER-KESTNER), 1876, i., 345; ii., 674; 1878, A., 650; 1880, A., 706.  
 oxidation of, by oxygen in presence of water (SKEY), 1876, ii., 608.  
 reduction of (VULPIUS), 1876, i., 192.  
 and certain other metals, silification of (BOUSSINGAULT), 1876, ii., 47.  
 decomposition of water by (SAINTE-CLAIRE DEVILLE and DEBRAY), 1876, ii., 43.  
 plating of tin, brass, white metal, or copper utensils with (ANON.), 1882, A., 1145.  
 use of, in the ultimate analysis of carbon compounds (KOPFER), 1876, i., 660; 1877, i., 228.  
 amalgamation of (CASAMAJOR), 1878, A., 474.  
 fulminating. See Fulminoplatinum.

**Platinum-black**, preparation of (SMITH), 1873, 141; (BÖTTGER), 1878, A., 114.  
 preparation of, by means of glycerol (ZDRAWKOWITSCH), 1876, ii., 47.  
 change of state of (BERTHELOT), 1882, A., 1023.  
 absorption of hydrogen by (FAVRE), 1874, 15, 1048, 1050.

**Platinum alloy** with gold, coating of mirrors with (ANON.), 1874, 928.  
 with iridium (MATTHEY), 1879, A., 772; (BROCH, SAINTE-CLAIRE DEVILLE and STAS), 1881, A., 680; (ANON.), 1881, A., 793.

- Platinum alloy**, specific gravity of (SAINTE-CLAIRE DEVILLE and DEBRAY), 1876, i., 523.  
 measure made of a 10 per cent. (BROCH, SAINTE-CLAIRE DEVILLE and STAS), 1881, A., 680.  
 with iron (FRENZEL), 1874, 1143; (SAINTE-CLAIRE DEVILLE), 1875, 534.  
 assay (PERRY), 1879, A., 555.
- Platinum and magnesium and platinum and zinc couples** (GLADSTONE and TRIBE), 1879, T., 575.
- Platinum compounds** (CLARKE and OWENS), 1882, A., 299.  
 preparation of (THOMSEN), 1877, ii., 276.  
 with tin and oxygen, analogous to purple of Cassius (DELACHANAL and MERMER); 1876, i., 48.
- Platinum salts**, thermochemistry of (THOMSEN), 1877, ii., 566.  
 containing two ammonium bases (HEINTZ), 1877, i., 592.  
 analysis of (WALLACH), 1881, A., 715.
- Platinum tetrabromide** (*platinic bromide*), preparation of (MEYER and ZÜBLIN), 1880, A., 445.  
*tetrachloride* (*platinic chloride*), preparation of, for the estimation of potassium (PRECHT), 1880, A., 577.  
 compounds of, with potassium bromide and chloride (PITKIN), 1880, A., 706.  
 hydrate of (*Norton's salt*) (JÖRGENSEN), 1878, A., 200.  
 platinous hydrate (THOMSEN), 1877, ii., 276.  
 ammonium acid periodide (JÖRGENSEN), 1877, ii., 571.  
 platinosplatinic oxide (JÖRGENSEN), 1878, A., 200.  
 platinous hypophosphite (ENGEL), 1881, A., 226.  
 silicide (GUYARD), 1876, ii., 384.  
*metastannate* (DITTE), 1882, A., 809.  
 sulphide (COPPOLA), 1880, A., 223.  
 oxidised, constitution and properties of (V. MEYER), 1877, ii., 114.  
*tetraplatinous thioplatinate* and *thio-stannate* (SCHNEIDER), 1873, 1197; 1874, 228.
- Platinum organic compound**:—  
 thiocyanate (WYRUBOFF), 1880, A., 618.
- Platinum, detection and estimation**:—  
 detection of small quantities of (FIELD), 1881, A., 649.  
 precipitation of, by hydrogen (RUSSELL), 1874, 11.
- Platinum-bases**, ammoniacal (CLEVE), 1874, 342.
- Platinum crucible guard** (ŠTOLBA), 1874, 1011.
- Platinum crucibles**, mending (GARSIDE), 1878, A., 1020.
- Platinum electrodes** (DRECHSEL), 1880, A., 300.  
 thermoelectric, behaviour of aqueous solutions with (GORE), 1881, A., 963.
- Platinum-hydrogen** (BERTHELOT), 1882, A., 1022.  
 reactions of (GLADSTONE and TRIBE), 1878, T., 308.
- Platinum metals**, chemistry of the (WILM), 1880, A., 854; 1881, A., 514; 1882, A., 1033.  
 separation of the (WILM), 1881, A., 226.
- Platinum-printing**, photographic (WILLIS), 1874, 1019; (ANON.), 1882, A., 113.
- Platinum residues**, treatment of (KNÜSEL), 1874, 443.
- Platinum still**, explosion of, used for concentrating sulphuric acid (KÜHLMANN), 1880, A., 517.
- Platinum vessels**, wearing out of, in the concentration of sulphuric acid (SCHEURER-KESTNER), 1876, i., 345; ii., 674; 1878, A., 650.
- Platinum water cell**, quantity of electricity necessary for charging a (HERWIG), 1879, A., 194.
- Platinum wires**, fine, drawing of (GAIFFE), 1878, A., 178.
- Plinian**, so-called (ARZRUNI), 1879, A., 901.
- Plumbomanganite** (HANNAY), 1878, A., 16.
- Plumbonacrite**. See Hydrocerussite.
- Plumeria acutifolia*, milky juice of, and plumeric acid (OUDEMANS), 1876, ii., 421.
- Poa pratensis*, cultivation of, in Saxony (NOBBE), 1882, A., 423.
- Podocarpic acid**, and *mono-* and *di-nitro-* (OUDEMANS), 1874, 72.
- Podophyllic acid**, **podophylloquercetin**, and **podophyllotoxin** (PODWYSOZKI), 1882, A., 977.
- Podophyllin** (GUARESCHI), 1880, A., 479.
- Podophyllum peltatum*, constituents of (BUSCH), 1878, A., 325; (PODWYSOZKI), 1882, A., 976.
- Podophyllum resin**, colour of (SENIER and LOWE), 1878, A., 326.
- Poison of Bothrops**, potassium permanaganate as an antidote to (COUTY), 1882, A., 879.

- Poison** of the Cobra di Capello (BLYTH), 1877, ii., 206.  
 natural, of the human corpse (MORIGIA and BATTISTINI), 1876, ii., 647; (MORIGIA), 1877, i., 331.  
 snake, influence of ammonia on (ANON.), 1876, i., 724.
- Poisons**, two new (HUSEMANN), 1876, i., 410.  
 metallic, destruction of organic matter when searching for (POUCHET), 1881, A., 463.  
 test for (v. STRUVE), 1873, 1168; 1874, 293.  
 metallic, detection of (VERRYKEN), 1874, 603; (v. WASOWICZ), 1879, A., 973.  
 organic, detection of (HEINTZ), 1878, A., 613.  
 vegetable, some reactions of (PAPE), 1877, i., 749.  
 chloroform as a solvent and means of separation of, in forensic investigations (NOWAK), 1873, 412, 535.
- Poisoning**, detection of alkaloids in cases of (LIEBERMANN), 1876, i., 966.  
 by carbonic oxide (GRUBER), 1881, A., 1086.  
 by choke-damp (BIEFEL and POLECK), 1878, A., 906; 1881, A., 853.  
 by copper, lead, and zinc (SOKOLOFF), 1878, A., 92.  
 detection of hydrocyanic acid in cases of (ALMÉN), 1873, 193; (REICHARDT), 1882, A., 246.  
 by lead (CHAMPILLON), 1874, 400; (SOKOLOFF), 1878, A., 92.  
 by phosphorus. See Phosphorus poisoning.  
 of fowls by pumpkin-seeds (HILLE), 1879, A., 1046.  
 See also Physiological action and Toxicological investigations.
- Polarisation**. See Electrochemistry and Photochemistry.
- Pollen**, estimation of, in hops (BRAUNGART), 1882, A., 1331.
- Pollucite** from Elba, composition of (RAMMELSBERG), 1878, A., 387; 1881, A., 1005.
- Polycrase** (BLOMSTRAND), 1880, A., 15.  
 crystallographic examination of (BRÖGGER), 1881, A., 398.
- Polydymite**, a new nickel ore (LASPEYRES), 1877, i., 581; ii., 858; (KENNGOTT), 1879, A., 18.
- Polygonum tinctorium**, preparation of indigotin from (SCHUNCK), 1878, A., 885; 1879, A., 532.
- Polyhalite** from Stassfurt (KRAUSE), 1876, i., 345.
- Polyporic acid**, and its chlorinated derivatives (STAHLSCHMIDT), 1877, ii., 620; 1879, A., 382.  
*dinitro-* (STAHLSCHMIDT), 1879, A., 383.
- Polyporus officinalis* (*white agaric*), examination of (FLEURY), 1876, i., 431.
- Polythymoquinone** (LIEBERMANN), 1878, A., 418.
- Pomegranate**, alkaloids of the (TANRET), 1878, A., 739; 1879, A., 170, 657; 1880, A., 481.  
 constituents of the bark of the root of the (DURAND), 1879, A., 169.
- Pompeii**, a thread-like substance found in the excavations of (DE LUCA), 1879, A., 680.
- Ponceau R.R.** (VIGNON and BOASSON), 1880, A., 717.
- Pond slime**, composition of (HOLDEFLEISS), 1881, A., 61.
- Ponsælin** (THOMPSON), 1878, A., 404.
- Poplar**, essential oil of (PICCARD), 1873, 1237; 1875, 1191.
- Poplar-wood**, constitution of (BENTE), 1876, i., 421.
- Poppies**, alkaloids from (KRAUSE), 1876, i., 777; (SELM), 1876, i., 938; (HESSE), 1878, A., 157.  
 respiration in the ripening fruit of (SABANIN and LIASKOWSKI), 1878, A., 333.
- Poppy oil**, bleaching of (PUSCHER), 1873, 100.
- Poppy petals**, composition of the ash of (WARDEN), 1879, A., 395.
- Populin** (*benzoylsalicin*), dextrose from (v. LIPPMANN), 1880, A., 29.
- Porcelain**, and some allied products of devitrification (BEHRENS), 1874, 544.  
 clay for. See Clay.  
 cement for (LIESEGANG), 1873, 97; (ANON.), 1874, 1115.  
 manufacture of Chinese (HEINTZ), 1876, ii., 671.  
 examination of Chinese and Japanese rocks used for (PABST), 1882, A., 483.  
 porosity of (ANON.), 1874, 100.  
 method of printing and burning-in of names, monograms, etc., on (MILLER), 1882, A., 785.  
 and stoneware, printing fusible colours on (ANON.), 1874, 1115.  
 fayence, glass, etc., Pollard's new system of muffles for burning-in colours on (SALVÉTAT), 1874, 400.  
 Arita, examination of the raw materials used for (MATSUI), 1881, A., 667.



- Porcelain basins**, utilisation of cracked (STARTING), 1876, i., 992.
- Porcelain earth**. See Kaolinite.
- Porphyrene and porphyrosine** (HESSE), 1881, A., 624.
- Porphyritic syenite-granite** from Watab, Minnesota (STRENG and KLOOS), 1877, ii., 580, 724.
- Porphyry** (REICHARDT), 1875, 434.
- of Lake Lugano (STUDER), 1876, i., 535.
- of South Tyrol, augitic, mineralogical composition of (DOELTER), 1877, i., 584.
- from the paper mill, near Weilburg, Nassau, composition of (HILGER), 1880, A., 856.
- with loose crystals of orthoclase in the Elbthalgebirge (WESTPHAL), 1874, 561.
- Porter**, Dublin, composition of (LAWRENCE and REILLY), 1879, A., 344.
- Portland cement**. See Cement.
- Portulaca**, composition of (STORER and LEWIS), 1879, A., 821.
- colouring matter of (HILGER and BISCHOFF), 1879, A., 730.
- Posidonia oceanica*, composition of (SESTINI), 1875, 184.
- Position**, experimental determination of (LADENBURG), 1879, A., 232.
- Potable water**. See under Water.
- Potamogetons**, precipitation of calcium carbonate by (WIBEL and ZACHARIAS), 1873, 765.
- Potash**. See Potassium hydroxide.
- Potash alum**. See Alum and Potassium alum.
- Potash felspar**. See Orthoclase.
- Potash-leys**, estimation of potassium ferrocyanide in (LUNGE), 1882, A., 895.
- Potash mica**, crystal system of (BAUER), 1879, A., 24.
- Potash micas** (GROTH), 1875, 542; (RAMMELSBERG), 1880, A., 224; 1881, A., 533; (FRENZEL), 1882, A., 473.
- Potash mines**, Stassfurt, formation of hydrogen in (PRECHT), 1881, A., 227.
- of Stassfurt and Leopoldshall, by-products and waste from, and their influence on the land (PUSCH), 1878, A., 452.
- Potashes**, estimation of soda in (WITTSTEIN), 1877, ii., 510; (VAN HASSELT), 1880, A., 580.
- Potassium**, atomic weight of (FRESENIUS), 1882, A., 1231.
- Potassium**, absorption spectrum of, at low temperatures (ROSCOE and SCHUSTER), 1874, 942.
- vapour-density of (DEWAR and DITTMAR), 1873, 726; (MEYER), 1880, A., 434.
- volatilisation of (KAEMMERER), 1874, 443.
- action of, on ethylic succinate (REMSEN), 1875, 1251; 1876, i., 564.
- slow oxidation of (LUTTON), 1876, ii., 565.
- Potassium alloy** with bismuth (MÉHU), 1874, 131, 1024.
- with mercury (*potassium amalgam*), chemical constitution of (BERTHELOT), 1879, A., 883; 1880, A., 1.
- heats of formation and oxidation of (BERTHELOT), 1879, A., 884.
- action of dilute hydrochloric acid on (BERTHELOT), 1879, A., 864.
- action of, on potassium tetr- and penta-thionates (LEWES), 1882, T., 300.
- action of water on (BERTHELOT), 1879, A., 864.
- Potassium salt** from India (TSCHERMAK), 1874, 134.
- Potassium salts** (BEILSTEIN), 1874, 822.
- from seaweed (ANON.), 1877, i., 237.
- behaviour of, in the blood (BUNGE), 1879, A., 816.
- behaviour of, in the organism (BUNGE), 1873, 1042.
- excretion of (DEHN), 1876, ii., 535.
- decomposition of some ammonium salts by (DIBBITS), 1877, i., 490.
- as manures. See under Agricultural Chemistry.
- process for precipitating, in the form of alum, from colours intended for roller printing (SCHLUMBERGER), 1873, 950.
- Potassium and silver**, haloid salts of, heat of formation of (BERTHELOT), 1882, A., 1019.
- sodium and magnesium salts, solubility of mixtures of (PRECHT and WITTJEN), 1882, A., 1264.
- Potassium alum** (*potash alum*), decomposition of, at 100° (NAUMANN), 1877, ii., 166.
- containing the alums of thallium, caesium and rubidium (COSSA), 1878, A., 952.
- and sodium alum, mutual relations of, in aqueous solution (VENABLE), 1880, A., 83.
- precipitation of, by sodium carbonate (MILLS and BARR), 1882, T., 341.

- Potassium alum** (*potash alum*). See also Alum.
- Potassium aluminate** (PRESCOTT), 1880, A., 849.
- bismuthates (MUIR), 1878, T., 197.
- boroduodecitungstate (KLEIN), 1880, A., 612; 1881, A., 24.
- bromide preparation of (FALIÈRES), 1873, 135; (CHIAPPE and MALESCI), 1877, i., 277.
- action of oxygen on (POTILIZIN), 1879, A., 770.
- compound of, with platinum *tetra*-chloride (PITKIN), 1880, A., 706.
- testing of (FALIÈRES), 1873, 191.
- testing of, for iodine and chlorine (HAGER), 1873, 528.
- detection of iodide in (HESSE), 1874, 601.
- detection of lead in (ANON.), 1882, A., 99.
- detection and estimation of, in potassium iodide (VAN MELCKEBEKE), 1873, 527; (LEPAGE), 1873, 528; (BILTZ), 1876, i., 745.
- and sodium chloride, double decomposition of, in the organism (BILL), 1877, i., 731.
- tellurium bromide (WILLS), 1879, T., 711.
- carbonate, percentage of, in wood ashes (NESSLER), 1882, A., 1313.
- preparation of nearly pure (SMITH), 1875, 337.
- manufacture of (ENGEL), 1881, A., 1087.
- method of increasing the yield of, from molasses (CAMICHEL and HENRIOT), 1877, ii., 816.
- new process for analysing commercial (CORENWINDER and CONTAMINE), 1880, A., 286.
- hydrogen carbonate (*potassium bicarbonate*), preparation of (PESCI), 1876, ii., 381.
- solubility and dissociation of (DIBBITS), 1875, 421.
- decomposition of moist and dry, by heat and reduced pressure (GAUTIER), 1876, ii., 602.
- chlorate, purification of (HILGER), 1876, i., 442.
- electrolysis of (GLADSTONE and TRIBE), 1878, T., 147.
- heat of formation of (THOMSEN), 1880, A., 89.
- action of carbon-hydrogen on (GLADSTONE and TRIBE), 1878, T., 310.
- action of hydrogenised copper on (JOHNSON), 1879, T., 240.
- Potassium chlorate**, action of the copper-zinc couple on (ECCLES), 1876, i., 856; (GLADSTONE and TRIBE), 1878, T., 147.
- action of ferric oxide on (MILLS and DONALD), 1882, T., 18.
- action of hydrochloric acid on (SCHACHERL), 1877, i., 47.
- action of manganese dioxide on (MILLS and STEVENSON), 1882, T., 23.
- action of, on the system (HEHNER), 1878, A., 683.
- perchlorate* (MUIR), 1876, i., 877.
- heat of formation of (BERTHELOT and VIEILLE), 1881, A., 1093.
- action of the copper-zinc couple on (ECCLES), 1876, i., 856.
- reduction of (TOMMASI), 1880, A., 2.
- solubility of, in water (MUIR), 1876, i., 877.
- chloride, purification of, by washing, in the chemical works at Stassfurt and Leopoldshall (KRAUSE), 1876, i., 447.
- heat of formation of (THOMSEN), 1876, i., 29; 1880, A., 89.
- heat of solution of (THOMSEN), 1876, i., 29; (V. RECHENBERG), 1879, A., 588.
- solubility of a mixture of sodium chloride and (SCHÖNACH), 1881, A., 223.
- combinations of ammonium chloride with (CHEVREUL), 1877, ii., 839.
- compound of, with platinum *tetra*-chloride (PITKIN), 1880, A., 706.
- compound of, with sugar (VIOLETTE), 1873, 611.
- See also Sylvite.
- chlorite, behaviour of, to phosphoryl chloride (SPRING), 1875, 1000.
- chromate, action of, on ammonium chloride, and alkaline reaction of (RICHTER), 1882, A., 1268.
- copper chromate, non-existence of (ROSENFELD), 1880, A., 853.
- ferric chromates (HENSCHEN), 1879, A., 887; 1880, A., 10.
- mono*- and *di*-chromates (MOHR), 1873, 354.
- dichromate*, action of, on potassium iodide (RICHTER), 1882, A., 1268.
- and sulphuric acid, action of, on narceine (BECKETT and WRIGHT), 1876, i., 467.
- alkalimetric titration of, and its use in alkalimetry (RICHTER), 1882, A., 1233.

**Potassium dichromate**, use of, in ultimate organic analysis (JOHNSON), 1874, 1011.  
 estimation of (PICKERING), 1880, T., 138.  
*tri- and tetra-chromates* (WYRUBOFF), 1881, A., 352; 1882, A., 146.  
 fluoride, specific gravity of (CLARKE), 1877, ii., 839.  
 compound of, with chromic acid (VARENNE), 1879, A., 1016.  
 beryllium fluoride (MARIGNAC), 1874, 24.  
 borofluoride (ANON.), 1873, 39.  
 tellurium fluoride (HÖGBOM), 1881, A., 223.  
 fluoxyniobate, isomorphism of, with potassium fluoxyuranate (BAKER), 1879, T., 761.  
 fluoxyuranates, preparation and crystalline forms of (BAKER), 1879, T., 763.  
 fluoxyvanadates (BAKER), 1878, T., 389.  
 fluozirconate, isomorphism of, with potassium fluoxyuranate (BAKER), 1879, T., 762.  
 hydride, formation of (TROOST and HAUTEFEUILLE), 1874, 767.  
 hydroxide (*caustic potash*) (GRÜNEBERG), 1876, ii., 220.  
 from bamboo (ROMANIS), 1882, A., 781.  
 and soda, distribution of, in plants (PELIGOT), 1873, 929.  
 extracted from beetroot juice (PELIGOT), 1875, 379.  
 soda, etc., recovery of, from soap-water (TESSIÉ DU MOTAY), 1873, 415.  
 preparation of (POLLACCI), 1873, 474.  
 direct preparation of, from potassium chloride (BOHLIG), 1877, ii., 945.  
 preparation of, from potassium sulphide (TESSIÉ DU MOTAY), 1873, 414.  
 improvements in the manufacture of (MACTEAR), 1879, A., 422.  
 constitution of solutions of (BERTHELOT), 1873, 1098.  
 heat of formation of (BERTHELOT), 1873, 999, 1096.  
 heats of decomposition, formation and neutralisation of (THOMSEN), 1876, i., 29.  
 specific heat of solutions of (HAMMERL), 1880, A., 435.  
 action of, on isomalic iodide (FLAWITZKY), 1874, 241.

**Potassium hydroxide** (*caustic potash*), action of, on bromoisobutyric acid (HELL and WALDBAUR), 1877, ii., 313.  
 action of, on trichlorobutyric acid (v. GARZAROLI-THURNLACKH), 1876, ii., 623; 1877, i., 59.  
 action of solutions of, on glycogen (v. VINTSCHGAU and DIETL), 1876, ii., 622; 1878, A., 850.  
 action of warm solutions of, on hemipinic and opianic acids (BECKETT and WRIGHT), 1876, i., 281.  
 action of the vapour of, on red-hot iron (DEBRAY), 1879, A., 887.  
 action of, on the mustard oils (SCHIFF), 1877, i., 68.  
 action of, on narceine (BECKETT and WRIGHT), 1876, i., 471.  
 action of, on a solution of potassium *tetra- and penta-thionate* (LEWES), 1882, T., 303.  
 "alcoholic" (MAUMENÉ), 1878, A., 655.  
 compound of, with coumarin (WILLIAMSON), 1875, 852.  
 compound of, with starch (TOLLENS), 1874, 245, 565; (PFEIFFER and TOLLENS), 1882, A., 490.  
 iodate, heat of formation of, from potassium iodide (BERTHELOT), 1878, A., 8.  
 behaviour of, in the animal organism (MELSENS), 1873, 398.  
 iodide from cuprous iodide (LANGBEIN), 1874, 1060.  
 extraction of, from kelp (ALLARY and PELLIEUX), 1881, A., 319.  
 preparation of (CHIAPPE and MALESCI), 1877, i., 277.  
 manufacture of (SCHERING), 1879, A., 504.  
 from iodate, processes for purifying (PELLAGRI), 1876, ii., 381.  
 decomposition of a solution of, by light (BATTANDIER), 1877, i., 577.  
 action of carbonic anhydride and light on (VIDAU), 1875, 326; (PELLAGRI), 1877, ii., 706; (PASOGGI), 1881, A., 975.  
 action of, on hydrogen peroxide (SCHÖNE), 1880, A., 606.  
 and iodine, action of lead acetate on (JOHNSON), 1878, T., 189.  
 action of lead iodide on (DITTE), 1882, A., 142.  
 action of lead carbonate, oxide and peroxide on (DITTE), 1881, A., 976; 1882, A., 142, 695.

- Potassium iodide**, mutual action of lead sulphate and (CAMPANI), 1877, i., 579.  
 action of potassium *dichromate* on (RICHTER), 1882, A., 1268.  
 reaction of, with sulphurous acid (MENKE), 1879, A., 352.  
 lead in commercial (SCHERING), 1879, A., 504.  
 compound of, with mercury iodide (EDER and ULM), 1882, A., 806.  
 method of testing for impurities in (LEPAGE), 1877, i., 344.  
 analysis of commercial (KASPAR), 1882, A., 96.  
 testing for potassium chloride in (KOSTER), 1874, 710.  
 testing for potassium iodate in (SCHERING), 1873, 191.  
 detection and estimation of potassium bromide in (VAN MELCKE-BEKE), 1873, 527; (LEPAGE), 1873, 528; (BILTZ), 1876, i., 745.  
 estimation, volumetric, of (PERSONNE), 1875, 1051.  
**bismuth iodide**, preparation of (THRESH), 1880, A., 705.  
 as a test for alkaloids (YVON), 1874, 1105; (MAUGINI), 1882, A., 900.  
 silver and thallium polyiodides (JOHNSON), 1878, T., 187.  
 iodide, iodated (GUYARD), 1879, A., 595.  
*triiodide* (JOHNSON), 1877, i., 249; 1878, T., 184.  
 action of ammonia on (JOHNSON), 1878, T., 397.  
*permanganate* and its oxidation products (MORAWSKI and STINGL), 1879, A., 204.  
 composition of (MAUMENÉ), 1874, 1138.  
 absorption-spectrum of (VOGEL), 1879, A., 189.  
 absorption-spectrum of, and its application to chemical analysis (v. BRÜCKE), 1878, A., 242.  
 the light reflected by (WIEDEMANN), 1875, 120; (CONROY), 1879, A., 425.  
 action of heat on (RANMELSBERG), 1875, 611.  
 alkaline, some reactions of, in the moist combustion process (WANKLYN and COOPER), 1879, A., 555.  
 action of ammonia, antimony hydride, arsine, ferrous sulphate, hydrogen, manganese chloride, oxalic acid and phosphine on (JONES), 1878, T., 95.
- Potassium permanganate**, action of benzoic acids and their sodium salts on (SCHACHT), 1882, A., 339; (SCHNEIDER; SCHÄR), 1882, A., 1138; (LEUKEN), 1882, A., 1328.  
 action of chlorine *peroxide* on (FÜRST), 1881, A., 353.  
 action of, on a neutral solution of dulcitol (FUDAKOWSKI), 1877, ii., 877.  
 action of, on invert sugar (BORODULIN), 1874, 244.  
 action of manganous chloride on (MORAWSKI and STINGL), 1879, A., 206.  
 action of, on milk sugar (LAUBENHEIMER), 1873, 46.  
 action of nitric acid on (WRIGHT and MENKE), 1880, T., 23.  
 action of, on sulphides (SCHLAGDENHAUFFEN), 1875, 186.  
 decomposition of, by hydrogen peroxide (BERTHELOT), 1880, A., 444.  
 as an oxidising agent (THOMSEN), 1875, 225.  
 oxidation of aromatic acetamines by (v. HOFMANN), 1877, i., 90.  
 as an antidote to the poison of Bothrops (COUTY), 1882, A., 879.  
 titration of (BERTHELOT), 1874, 918, 1179.  
 use of vanadium for the titration of (GERLAND), 1878, A., 244.  
 use of, in volumetric analysis (PARNELL), 1875, 27; ZIMMERMANN), 1881, A., 759; (KESSLER), 1881, A., 843.  
 nitrate (*nitre; saltpetre*), distribution of, in the beet (PELLET), 1880, A., 733.  
 origin of, in some of the experiments of Cloëz (PESCI), 1876, i., 188.  
 manufacture of, from the salts of "osmose water" (D'HAVRING-COURT), 1882, A., 1012.  
 electrolysis of (GLADSTONE and TRIBE), 1878, T., 145.  
 action of the copper-zinc couple on (GLADSTONE and TRIBE), 1878, T., 139.  
 yellow, containing iodine and chromium (DOMEYKO), 1882, A., 471.  
 analysis of, by the aid of Lunge's nitrometer (LUNGE), 1882, A., 774.



**Potassium nitrate** (*nitre*; *saltpetre*), analysis of, used for the manufacture of gunpowder (FRESENIUS), 1876, ii., 651.  
 estimation of minute quantities of soda in (CASTAN), 1879, A., 399.  
 See also under Agricultural Chemistry.  
 nitrite, preparation of (PERSOZ), 1878, A., 471; (MÜLLER and PAULY), 1879, A., 595.  
 action of, on ammonium chloride (TOMMASI), 1881, A., 788.  
 cobalt nitrite, estimation of cobalt in (BRAUNER), 1877, ii., 511.  
 zinc oxide (PRESCOTT), 1880, A., 852.  
 lithium pyrophosphates (KRAUT, NAHNSEN and CUNO), 1876, ii., 603.  
 phosphate and urea solution, action of bacteria on (HATTON), 1881, T., 256.  
 platinochloride, solubility of, in alcohol (PRECHT), 1880, A., 578.  
 platino-chloride, and -bromide and platinochlorobromide (PITKIN), 1880, A., 706.  
 platinoso-bromide and -chloride (THOMSEN), 1877, ii., 276.  
 plumbate (SEIDEL), 1880, A., 94.  
 selenates (CAMERON and DAVY), 1881, A., 1100.  
 silicates (MASSIE), 1876, i., 120.  
 ferric silicate analogous to leucite (HAUTFEUILLE), 1881, A., 389.  
 sulphate (OGIER), 1876, ii., 275.  
 preparation of, from the salts of the Stassfurt deposits (GRÜNEBERG), 1881, A., 855.  
 chemical equivalent of (MILLS and WALTON), 1880, A., 437.  
 decomposition of, by water (DITTE), 1875, 332.  
 action of calcium sulphate on (DITTE), 1877, i., 440.  
 action of silica on (MILLS and MEANWELL), 1881, T., 533.  
 and calcium sulphate, double salt of, decomposition of, by water (DITTE), 1875, 332.  
 estimation of, in kainite (PRECHT), 1882, A., 96.  
 estimation of potassium in (WEST), 1882, A., 553.  
 use of, as a flux for metallic sulphides and analogous compounds (WERSKY), 1873, 89.  
 See also Kainite.  
 beryllium sulphate (ATTERBERG), 1873, 1004.

**Potassium chromium sulphate.** See Chrome alum.  
 ferrous sulphate (CARO), 1873, 246.  
 hydrogen sulphate, action of, on natural sulphides (JANNETTAZ), 1874, 773.  
 use of, to detect the presence of galena (JANNETTAZ), 1874, 188.  
 magnesium sulphate (ANON.), 1881, A., 854.  
 anhydrosulphate (LESCŒUR), 1874, 870.  
 pyrosulphate, action of, on indigo-white (v. BAEYER), 1880, A., 46.  
 sulphide, heat of formation of (SABATIER), 1879, A., 866.  
 action of, on various salts (MYERS), 1873, 845.  
 cobalt and nickel sulphides (SCHNEIDER), 1875, 43.  
 indium sulphide (SCHNEIDER), 1874, 871.  
 nitrosoferrous sulphide (ROSENBERG), 1880, A., 10.  
 zinc sulphide (SCHNEIDER), 1874, 228.  
 hydrosulphide (*potassium sulphhydrate*), heats of formation and hydration of (SABATIER), 1879, A., 865.  
 action of, on aromatic nitriles (WEDDIGE), 1873, 1241.  
 action of, on chloral hydrate (MICHAEL), 1877, i., 188.  
 sulphides, heat of formation and hydration of (SABATIER), 1879, A., 865; 1880, A., 689; 1881, A., 492.  
 sulphite, action of, on the haloid derivatives of phenol (ARMSTRONG and HARROW), 1876, i., 474.  
 thiocarbonate, manufacture of (VINCENT), 1881, A., 855.  
 dissociation of (ROMMIER), 1875, 1181.  
 estimation of carbon disulphide in (DELACHANAL and MERMET), 1876, i., 108; (DAVID and ROMMIER), 1876, i., 109.  
*tetrathionate* (SPRING), 1880, A., 215.  
*tetra-* and *penta-*thionates, action of potassium amalgam, sulphuretted hydrogen, and potassium hydroxide respectively on (LEWES), 1882, T., 300.  
*pentathionate* (LEWES), 1881, T., 75.  
 palladium thiopalladate (SCHNEIDER), 1873, 1197.  
 thiosulphate (BERTHELOT), 1877, i., 278.  
 heat of dissociation of (BERTHELOT), 1876, i., 676.

Potassium tungstate, action of organic acids on (LEFORT), 1876, ii., 278.  
 uranate (ZIMMERMANN), 1881, A., 686.

*peruranate* (FAIRLEY), 1877, i., 140.

**Potassium organic compounds:—**

carbanate (DRECHSEL), 1878, A., 45.

cyanate (BELL), 1876, i., 68; (BANKOW), 1881, A., 144.

action of alcohol on (AMATA), 1874, 366.

action of calcium hypochlorite or hypobromite on (FENTON), 1878, T., 302.

action of, on chloral hydrate (WALLACH), 1876, i., 376.

action of, on sarcosine (SALKOWSKI), 1874, 464.

cyanide, pure commercial (MOLDENHAUER), 1877, ii., 423.

action of, on chloraldehydes (WALLACH), 1875, 351.

action of, on trichlorobutaldehyde (WALLACH and BOEHRINGER), 1874, 461.

action of, on ethylic dichloracetate (CLAUS and WEISS), 1878, A., 565; (CLAUS), 1878, A., 721; 1881, A., 798.

action of, on ethylic chloromaleate (CLAUS), 1877, ii., 739.

action of, on substituted nitro-compounds (v. RICHTER), 1876, i., 387.

action of, on the isomeric *o*-nitro-*m*-bromobenzoic acids (VAN RENESSE), 1877, i., 311.

action of, on organic chlorides (CLAUS), 1875, 564.

action of potassium permanganate on (BAUDRIMONT), 1880, A., 307.

decomposition of, in carbonic acid, air, and pure hydrogen (NAUDIN and DE MONTHOLON), 1877, i., 66.

use of, for estimating mercury (HANNAY), 1873, 565.

detection of, in presence of non-poisonous double cyanides (JACQUEMIN), 1875, 384.

estimation of, in silver salts which have been used for electroplating (WITTSTEIN), 1874, 1012.

chromo- and chromi-cyanides (MOISSAN), 1882, A., 485.

cobaltocyanide (DESCAMPS), 1879, A., 303.

cuprocyanide (VIDAU), 1877, i., 456.

ferricyanide (BONG), 1876, i., 908.  
 preparation of (RHJEN), 1873, 282, 380.

**Potassium organic compounds:—**

ferricyanide, preparation of, by means of lead peroxide (SEUBERLICH), 1881, A., 239; (LUNGE), 1881, A., 323.

heat of formation of (JOANNIS), 1882, A., 790.

action of carbon-hydrogen on (GLADSTONE and TRIBE), 1878, T., 311.

behaviour of certain metals in a solution of (BÖTTGER), 1873, 282, 473.

action of, on metallic silver, and the conversion of silver negatives (EDER), 1877, ii., 234.

reduction of, to ferrocyanide by heating with zinc and spongy copper (THORPE), 1873, 548.

*superferricyanide* (SKRAUP), 1878, A., 35.

lead ferricyanide (WYRUBOFF), 1877, ii., 869; (SCHULER), 1879, A., 702.

ferrocyanide (BONG), 1876, i., 908.

production of, from ammonium thiocyanate (ALANDER), 1878, A., 258.

action of, alkaline hypobromite on (FOSTER), 1879, T., 123.

action of bromine on (MERZ and EZWEILER), 1879, A., 702.

action of ammoniacal copper sulphate on (GUYARD), 1879, A., 775.

action of, on diazobenzene (GRIESS), 1876, i., 932.

some reactions of, with iodine and palladium chloride (KERN), 1876, ii., 325.

behaviour of certain metals to a solution of (BÖTTGER), 1873, 282, 473.

a process for utilising the residue from the manufacture of (GAWALOWSKI), 1879, A., 680.

analysis of the black matter obtained by calcining (TERRELL), 1876, i., 909.

estimation of, in soda and potash-leys (LUNGE), 1882, A., 895.

ferriferrocyanide (*soluble Prussian-blue*) (SKRAUP), 1876, i., 377; 1877, ii., 597.

yttrium ferrocyanide (CLEVE and HÖGLUND), 1873, 138.

gold cyanides and their halogen derivatives (LINDBOM), 1878, A., 131.

palladiocyanide (VIDAU), 1877, i., 456.

mercaptide (CLAËSSON), 1877, ii., 294.

**Potassium organic compounds:—**

- magnesium platinoeyanide (RICHARD and BERTRAND), 1881, A., 240.  
 thiocyanate, conversion of perthiocyanic acid into (STEINER), 1882, A., 1274.  
 preparation of (SKEY), 1873, 879.  
 behaviour of (SCHLAGDENHAUFFEN and WURTZ), 1878, A., 36.  
 action of allylic iodide on (BILLETTER), 1876, ii., 184.  
 action of benzoic chloride on, in alcoholic solution (LÖSSNER), 1874, 366; 1875, 640.  
 action of, on compounds of chloroacetic acid (CLAËSSON), 1878, A., 37.  
 behaviour of, with some of the cinchona alkaloids (HESSE), 1879, A., 281.  
 action of potassium permanganate on (MORAWSKI and STINGL), 1879, A., 205.  
 thiocyanoplatinate (WYRUBOFF), 1877, ii., 869.
- Potassium, detection, estimation and separation:—**  
 sodium cobalt nitrite as a test for (CURTMAN), 1882, A., 95.  
 detection of (CARNOT), 1876, ii., 426; 1877, i., 50.  
 estimation of (MOHR), 1874, 188; (CARNOT), 1876, ii., 426; 1877, ii., 921; 1878, A., 448; (KRETSCHY), 1876, ii., 652; (KNOP), 1882, A., 1132.  
 estimation of, in potassium salts and in manures (ANON.), 1878, A., 1007; (ROUSSELOT), 1882, A., 95.  
 estimation of, in commercial products (ANON.), 1878, A., 1007.  
 estimation of, in potassium sulphate (WEST), 1882, A., 553.  
 estimation of, in wine (KAYSER), 1882, A., 336.  
 estimation of, as acid tartrate (CASAMAJOR), 1877, i., 341.  
 estimation of, in the form of perchlorate (KRAUT, ORRMANN and KÜSEL), 1876, i., 440.  
 estimation of, as platinochloride (KRAUSE), 1876, i., 441; (FRESENIUS), 1877, ii., 220; 1882, A., 1231; (PRECHT), 1880, A., 577; (ZUCKSCHWERT and WEST), 1881, A., 941; (LINDO), 1881, A., 1169.  
 separation of sodium and (SCHLESING), 1877, ii., 921.  
 See also under Agricultural Chemistry.
- Potatoes.** See under Agricultural Chemistry.

- Potato-spirit**, preparation of pressed yeast as a bye-product from (BÉLOHOUBEK), 1879, A., 843.
- Potato starch and potato starch sugar.** See under Carbohydrates.
- Potstone** of Chiavenna (v. GÜMBEL), 1879, A., 26.
- Pottery**, Roman, glaze of (KELLER), 1878, A., 618.
- Poudrette.** See Manures, under Agricultural Chemistry.
- Precipitates**, cohesion of (BERTHELOT), 1874, 1054.  
 washing of gelatinous (CHATARD), 1873, 527.  
 estimation of, without washing or drying (POPPER), 1877, ii., 638; 1879, A., 480.
- Prehnite** (VOM RATH), 1881, A., 550.  
 occurrence of, in Tuscany (CORSI), 1881, A., 26.
- Prehnitic anhydride** (v. BAEYER), 1873, 755.
- Preservative fluid**, Wickerheim's (v. STRUVE; JACOBSEN), 1881, A., 126.
- Press residues.** See under Agricultural Chemistry.
- Pressure**, influence of, on chemical phenomena (BERTHELOT), 1878, A., 8.  
 influence of, on combustion (CAILLETET), 1875, 1234; (WARTHA), 1876, ii., 376.  
 influence of, on the spectra of vapours and gases (CIAMICIAN), 1879, A., 101, 685.  
 chemical union induced by (SPRING), 1881, A., 498, 504; 1882, A., 273.  
 and cold, effects of, on gaseous products of distillation of carbonaceous shales (COLEMAN), 1875, 856.  
 and temperature, physical properties of matter in the liquid and gaseous states under varied conditions of (ANDREWS), 1876, ii., 159.  
 critical. See Critical pressure.
- Pressure-regulator** (MEYER), 1873, 349.
- Pressures** produced by galvanic deposits (BOUTY), 1879, A., 576.
- Priceite** (*pandermit*) (SILLIMAN), 1874, 344; (VOM RATH), 1878, A., 710.
- Prinavera-wood** (MOELLER), 1880, A., 596.
- Primerose** (DURAND), 1878, A., 455.
- Primula-camphor** (MUTSCHLER), 1877, ii., 903.
- Printing**, use of electrolysis in (GOPPELS-ROEDER), 1882, A., 1338.

**Printing**, and burning-in of names, monograms, etc., on glass and porcelain, method of (MILLER), 1882, A., 785.

coloured, on cottons dyed with indigo (DÉPIERRE), 1878, A., 455.

heliographic, new methods of (GOURDON), 1873, 1203; (OTT), 1879, A., 750; (KAVČIČ), 1882, A., 1009.

in lines and half-tones (EDER), 1882, A., 1008.

on sheet zinc (OTT), 1879, A., 751.

**Printing-colour**, cheap, for aniline colours on cotton (ANON.), 1873, 308.

**Privet-berry juice**, detection of, in wine (GAUTIER), 1877, ii., 937.

**Proceedings at Meetings of the Chemical Society**, 1873, 769; 1874, 1194; 1875, 1305; 1876, ii., 681; 1877, ii., 955; 1878, T., 547; 1879, T., 817; 1880, T., 837; 1881, T., 563; 1882, T., 429.

**Propaldehyde** (LINNEMANN), 1878, A., 776.

heat of formation of (BERTHELOT), 1876, ii., 474.

action of furfuraldehyde on, in presence of soda (SCHMIDT), 1881, A., 573.

action of hydrogen sulphide on (ALEXÉEFF), 1878, A., 132.

$\alpha\beta$ -dibromo- (GRIMAUZ and ADAM), 1881, A., 1029.

$\beta$ -chloro- (*acrolein hydrochloride*) (KRESTOWNIKOFF), 1878, A., 23; 1880, A., 234.

reactions of (TAUBERT), 1877, i., 295.

**Parapropaldehyde**,  $\beta$ -chloro- (GRIMAUZ and ADAM), 1881, A., 406, 888.

**Propane**, action of bromine on (MERZ and WEITH), 1879, A., 302.

ultimate action of chlorine upon (KRAFFT and MERZ), 1876, i., 539.

**Propane**, bromo-. See Propyllic bromide.

$\alpha\beta$ -dibromo- (*propylenic bromide*) (ERLENMEYER), 1879, A., 908.

preparation of (PRUNIER), 1873, 487.

action of the copper-zinc couple on (GLADSTONE and TRIBE), 1874, 408.

action of silver oxalate on (KARETNIKOFF), 1877, ii., 422.

action of water on (NIEDERIST), 1879, A., 700.

debromination of, by means of silver oxide (BEILSTEIN and WIEGAND), 1882, A., 1038.

**Propane**,  $\alpha\gamma$ -dibromo- (*trimethylenic bromide*) (REBOUL), 1879, A., 129; (FREUND), 1882, A., 156.

preparation of (HERMONTOFF), 1877, i., 59; (BOGOMOLETZ), 1878, A., 963; (ERLENMEYER), 1879, A., 908.

$\alpha\alpha$ -dibromo- (*propylenic bromide*) (REBOUL), 1879, A., 129.

$\beta\beta$ -dibromo- (*bromacetol*) (REBOUL), 1879, A., 129.

*pentabromo-* (*propargylic pentabromide*) (HENRY), 1874, 977.

bromiodo- (*propylenic bromiodide*) (SIMPSON), 1874, 564.

$\alpha\alpha$ - and  $\beta\beta$ -bromonitro- and dibromonitro- (MEYER and TCHERNIAC), 1876, i., 901.

$\beta$ -chloro-. See *isopropyllic chloride*.

$\alpha\beta$ -dichloro- (*propylenic chloride*) (REBOUL), 1879, A., 128.

$\alpha\gamma$ -dichloro- (*trimethylenic chloride*) (REBOUL), 1873, 1015; 1879, A., 128; (FREUND), 1882, A., 156.

$\alpha\alpha$ -dichloro- (*propylenic chloride*) (REBOUL), 1873, 1015; 1876, i., 894; 1879, A., 128.

$\beta\beta$ -dichloro- (*chloracetol*) (REBOUL), 1879, A., 128.

$\alpha\alpha\gamma$ -trichloro- ( *$\beta$ -chloropropylenic chloride*) (KRESTOWNIKOFF), 1880, A., 234; (VAN ROMBURGH), 1882, A., 589.

$\alpha\alpha\beta\gamma$ -tetrachloro- (*allylene tetrachloride*; *allylidenic tetrachloride*) (HARTENSTEIN), 1873, 1218; (VAN ROMBURGH), 1882, A., 376.

$\alpha\beta\beta\gamma$ -tetrachloro- (*allene tetrachloride*) (HENRY), 1882, A., 1039.

chlorobromo- (*propylenic chlorobromide*), direct formation of (SIMPSON), 1880, A., 456.

$\alpha\gamma$ -chlorobromo- (*trimethylenic chlorobromide*) (REBOUL), 1874, 976; 1879, A., 131.

$\alpha\beta$ -,  $\alpha\alpha$ - and  $\beta\beta$ -chlorobromo- (REBOUL), 1874, 976; 1879, A., 131.

$\alpha$ -chloro- $\alpha\beta$ -dibromo- ( *$\alpha$ -chloropropylenic bromide*) (REBOUL), 1876, i., 894.

dichlorodibromo- (*allylene dichlorodibromide*) (HARTENSTEIN), 1873, 1218.

$\beta\alpha$ -chloriodo- (*propylenic chloriodide*), action of hydriodic acid on (DA SILVA), 1882, A., 294.

$\alpha\gamma$ -diiodo- (*trimethylenic iodide*) (FREUND), 1882, A., 156.

$\alpha$ -nitro- (MEYER and RILLIET), 1873, 261; (CAHOURS), 1873, 866.



- Propane**,  $\beta$ -nitro- (MEYER and CHOJNACKI), 1873, 262.  
 nitroethane and nitromethane, reactions of the heavy metals with the sodium compounds of (MEYER and CHOJNACKI), 1873, 262.  
 $\alpha$ -dinitro- (TER MEER), 1876, i., 68; ii., 186; (CHANCEL), 1878, A., 964.  
 $\beta$ -dinitro- (MEYER and LOCHER), 1875, 445; 1876, i., 904.
- Propanephosphonic acid** (v. HOFMANN), 1873, 883.
- Propanesulphonic acid** (CLAUS), 1875, 880.
- Propanetetracarboxylic acid** (*isoallyl-cinetetacarboxylic acid*) (BISCHOFF), 1881, A., 156.
- Propanetricarboxylic acid** (*propenyltricarboxylic acid*) (BISCHOFF), 1881, A., 156; (BISCHOFF and GUTHZEIT), 1881, A., 579; (BISCHOFF and EMMERT), 1882, A., 1191.  
 See also Tricarballic acid.
- Propargylic acid**. See Propiolic acid.
- Propargylic alcohol**, acetate, iodide and thiocyanate (HENRY), 1873, 1123.  
 bromide (HENRY), 1873, 1123; 1874, 977.  
 tribromide. See Propylene,  $\alpha\beta$ -tribromo-.
- pentabromide**. See Propane, *penta-bromo*.
- compounds, action of hypochlorous acid on (HENRY), 1881, A., 1120.
- Propenyl alcohol**. See Glycerol.
- Propenylamidine** (*propionamidine*), hydrochloride of (PINNER and KLEIN), 1879, A., 47.
- Propenyl-o-amidophenyl mercaptan** (v. HOFMANN), 1880, A., 389, 885.
- Propenylbenzenesulphonamide** (MEYER and BAUR), 1880, A., 166.
- p-Propenylbenzoic acid** (MEYER and ROSICKI), 1879, A., 157, 465.
- isoPropenylbenzoic acid** (MEYER and ROSICKI), 1879, A., 466.
- Propenylisopropylbenzene** (*isopropyl-allylbenzene*) (PERKIN), 1877, ii., 664.
- Propenyltricarboxylic acid**. See Propanetricarboxylic acid.
- Propiolic acid** (*propargylic acid*), potassium salt of (v. BANDROWSKI), 1881, A., 239.  
 bromo- (JACKSON and HILL), 1879, A., 225; (HILL), 1879, A., 616.
- Propionamide** (PINNER and KLEIN), 1879, A., 47.  
 $\alpha\alpha$ -dichloro- (BECKURTS and OTTO), 1878, A., 292.
- Propionamidine**. See Propenylamidine.
- Propionbromamide and propionethyl-carbamide** (v. HOFMANN), 1882, A., 1052.
- Propionic acid** (FLAWITZKY), 1878, A., 965; (CLAISEN and MORITZ), 1880, T., 694.  
 preparation of, from carbon monoxide (BERTHELOT), 1873, 614; 1874, 246.  
 preparation of, from lactic acid (FREUND), 1873, 54.  
 simple method of obtaining, from propionitrile (BECKURTS and OTTO), 1877, ii., 179.  
 preparation of, by oxidation of *n*-propylic alcohol, and its properties (PIERRE and PUCHOT), 1873, 44, 615.  
 new synthesis of (VAN'T HOFF), 1874, 141.  
 action of chlorine on (KRAFFT), 1876, ii., 503.  
 $\alpha\alpha$ -dibromopropionic acid from (PHILIPPI and TOLLENS), 1873, 1018.  
 double salts of (FITZ), 1880, A., 799; 1881, A., 797.  
 barium salt of, compound of, with barium acetate, crystallography of (FITZ), 1880, A., 799.  
 lead salt of, compound of, with calcium butyrate, crystallography of (FITZ), 1881, A., 797.  
 some derivatives of (FREYTAG), 1880, A., 312.  
 tetrasubstitution derivatives of (HILL and MABERY), 1881, A., 1029.  
 separation of, from acetic and formic acids (LINNEMANN), 1874, 605.
- Propionic acid**, amido-. See Alanine.
- $\alpha\alpha$ -dibromo-, from propionic acid (PHILIPPI and TOLLENS), 1873, 1018.  
 decomposition of, by water (FITZ and THOMSON), 1880, A., 380.  
 maleic and malic acids from (TANATAR), 1880, A., 374.
- $\alpha\beta$ -dibromo- (LINNEMANN and PENL), 1876, i., 64.  
 conversion of the  $\alpha\alpha$ -dibromopropionic acid into (PHILIPPI and TOLLENS), 1874, 680.  
 melting point of (TOLLENS), 1876, i., 561.  
 $\alpha$ -bromacrylic acid from (WAGNER and TOLLENS), 1873, 1220.
- $\beta\beta$ -dibromo-, action of potassium iodide on (v. ZOTTA), 1878, A., 782.  
 conversion of  $\beta$ -bromacrylic acid into (WAGNER and TOLLENS), 1874, 680.

- Propionic acid, tribromo-** [m.p.  $92^{\circ}$ ] (MICHAEL and NORTON), 1881, A., 800; (MAUTHNER and SUDA), 1881, A., 889.
- tribromo-** [m.p.  $118^{\circ}$ ] from  $\alpha\beta$ -dibromacrylic acid and its salts (HILL and ANDREWS), 1881, A., 1030; 1882, A., 1186.
- tetrabromo-** (MAUTHNER and SUDA), 1881, A., 889; (HILL and MABERY), 1881, A., 1030.
- tribromodinitro-** (BENEDIKT), 1877, ii., 193.
- $\alpha$ -chloro-**, action of phenol on (SAAR-BACH), 1880, A., 393.
- $\alpha\alpha$ -dichloro-**, and its salts, from *di*-chloropropionitrile (BECKURTS and OTTO), 1877, ii., 180.
- formation of, from pyruvic acid (BECKURTS and OTTO), 1878, A., 488.
- behaviour of, to nascent hydrogen (BECKURTS and OTTO), 1877, ii., 181.
- action of molecular silver on (BECKURTS and OTTO), 1878, A., 290.
- and the decomposition of, by water (BECKURTS and OTTO), 1878, A., 290.
- conversion of, into acetic and carb-acetoxylic acids (BECKURTS and OTTO), 1877, ii., 181.
- conversion of, into  $\alpha$ -chloracrylic and pyruvic acids (BECKURTS and OTTO), 1877, ii., 181; 1878, A., 291.
- $\alpha$ -chloracrylic acid** from (BECKURTS and OTTO), 1878, A., 291.
- $\alpha\beta$ -dichloro-** (HENRY), 1878, A., 290; (MELIKOFF), 1882, A., 38.
- from glyceric acid (WERIGO and WERNER), 1874, 242; (WERIGO and MELIKOFF), 1878, A., 289, 1879, A., 521.
- chlorobromo-** (HENRY), 1874, 980.
- $\alpha$ - and  $\beta$ -dichlorodibromo-** (HILL and MABERY), 1881, A., 1029.
- chlorotribromo-**, and its salts (MABERY and LLOYD), 1881, A., 1126; (MABERY and WEBBER), 1882, A., 1047.
- cyano-** (WANKLYN and COOPER), 1880, A., 460.
- $\beta$ -iodo-** (MELIKOFF), 1880, A., 800.
- preparation of (MULDER), 1877, ii., 312.
- decomposition of, by water (FITTIG and THOMSON), 1880, A., 380.
- $\beta$ -nitro-**, preparation of (LEWKOWITSCH), 1880, A., 33.
- Propionic acid,  $\alpha$ -nitroso-**, and its salts (MEYER and ZÜLLIN), 1878, A., 659; (GUTKNECHT), 1880, A., 712.
- new method of preparing (MEYER and JANNY), 1882, A., 1047.
- $\beta$ -thio-**, and its salts (DUPRÉ), 1878, A., 568.
- Propionic anhydride**, preparation of (PERKIN), 1875, 10.
- Propionic bromide,  $\alpha$ -bromo-**, action of zinc-methyl on (KASCHIRSKY), 1879, A., 46; 1882, A., 36.
- Propionic chloride,  $\alpha\alpha$ -dichloro-** (BECKURTS and OTTO), 1878, A., 488.
- $\beta$ -thio-** (DUPRÉ), 1878, A., 569.
- Propionic coumarin.** See Methylcoumarin.
- Propionimidamide.** See Propenylamidine.
- Propionitrile (ethyl cyanide)** (FRANKLAND and GRAHAM), 1880, T., 741.
- physical properties of (THORPE), 1880, T., 205, 366.
- action of hydrochloric acid and alcohol on (PINNER and KLEIN), 1879, A., 47.
- simple method of obtaining propionic acid from (BECKURTS and OTTO), 1877, ii., 179.
- $\alpha$ -amido-** (ERLENMEYER and PAS-SAVANT), 1880, A., 313.
- $\alpha$ -chloro-** (BECKURTS and OTTO), 1877, i., 297.
- dichloro-** (volatile), constitution of (BECKURTS and OTTO), 1877, i., 298.
- dichloro-** (solid) (BECKURTS and OTTO), 1877, ii., 182; 1878, A., 285.
- Propionothiocarbamide** (FREYTAG), 1880, A., 312.
- Propionyl cyanide** (CLAISEN and MORITZ), 1880, T., 692; 1881, A., 154.
- Propionylformic acid**, and its salts and amide (CLAISEN and MORITZ), 1880, T., 691; 1881, A., 154.
- Propionylquinine** (HESSE), 1881, A., 620.
- Propionylrharnetin** (LIEBERMANN and HOERMANN), 1879, A., 272.
- Propiophenone (phenyl ethyl ketone)** (BARRY), 1874, 74; (DE BECHT), 1879, A., 529; (FRANKLAND and LOUIS), 1880, T., 744.
- Propiophenonecarboxylic acid (phenyl-ethylketone- $\alpha$ -carboxylic acid)** (GABRIEL and MICHAEL), 1878, A., 735.

- Propoxide**, aluminium (GLADSTONE and TRIBE), 1881, T., 4.  
boron (CAHOUS), 1873, 872.
- Propyl compounds** (PIERRE and PUCHOT), 1873, 44, 615; (LINNEMANN), 1876, ii., 504.
- Propyl glycol**. See Propylenic glycol.
- isoPropyl mercaptan** (CLAUS), 1875, 880.
- isoPropylacetic acid**. See *isoValeric acid*.
- isoPropylacetylene**. See *Pentineue*.
- isoPropylallylbenzene** (*propenyliso-propylbenzene*) (PERKIN), 1877, ii., 664.
- Propylamidoethylic formate**. See *Ethylic propylcarbamate*.
- Propylamine**, preparation of (WALLACH and SCHULZE), 1881, A., 572.  
phthalate, action of phosphorus pentachloride on (WALLACH and KAMENSKI), 1881, A., 285.
- Propylazaurolic acid** (MEYER and CONSTAM), 1881, A., 896.
- Propylbenzenes**. See *Cumenes*.
- Propylbenzenesulphonic acids**. See *Cumenesulphonic acids*.
- Propylbenzoic acids**. See *Cuminic acids*.
- Propylbromal propyl alcoholate** (HARDY), 1875, 245.
- isoPropylbutenylbenzene** ( *$\alpha$ -butenylcumene*) (PERKIN), 1877, ii., 665.
- $\beta$ -isoPropylbutenylbenzene** ( *$\beta$ -butenylcumene*) (PERKIN), 1879, T., 141.
- isoPropylisobutylphosphine** (V. HOFMANN), 1873, 883.
- Propylbutyrylcarbamides**, *n*- and *iso*- (V. HOFMANN), 1882, A., 1053.
- p*-isoPropylcinamene**. See *p*-Vinylisopropylbenzene.
- Propyl-*m*-cresol** and its derivatives (MAZZARA), 1882, A., 1198.  
synthesis of, by means of anhydrous magnesium chloride (MAZZARA), 1882, A., 838.  
propyl ether of (MAZZARA), 1882, A., 1199.
- isoPropyl-*m*-cresol**, synthesis of, by means of anhydrous magnesium chloride (MAZZARA), 1882, A., 838.
- Propylcrotonic acids**, chloro-*n*- and *iso*- (DEMARÇAY), 1877, ii., 591.
- isoPropyldiallylcarbinol** (*decinyl alcohol*) (RJABININ and SAYTZEFF), 1879, A., 612.
- Propylene** (REBOUL and BOURGOIN), 1877, ii., 728.  
preparation of (CLAUS), 1876, ii., 284; (BEILSTEIN and WIEGAND), 1882, A., 1038.
- Propylene**, action of hydrogen iodide on (BERTHELOT), 1876, i., 58.  
action of hypochlorous acid on (HENRY), 1875, 443, 1179; 1876, ii., 284.  
action of oxidising agents on (O. and F. ZEIDLER), 1879, A., 907.  
inability of, to combine with water (LINNEMANN), 1877, ii., 729.
- Propylene**,  $\gamma$ -bromo-. See *Allylic bromide*.
- $\beta$ - and *iso*- $\alpha$ -bromo- (REBOUL), 1875, 50; 1879, A., 130.
- $\alpha\beta$ -dibromo- ( *$\alpha$ -bromallylic bromide*), conversion of, into  $\alpha$ -bromallylic alcohol (HENRY), 1881, A., 567.
- tribromo- (*propargylic tribromide*) (HENRY), 1874, 977.
- $\alpha$ - and  $\beta$ -chloro- (REBOUL), 1879, A., 128.
- $\alpha$ -chloro- (REBOUL), 1876, i., 894.
- $\gamma$ -chloro-. See *Allylic chloride*.
- aa*-dichloro- (*allylidenic chloride*) (VAN ROMBURGH), 1882, A., 376.
- $\beta\gamma$ -dichloro- (*allylene chloride*), action of sodium and carbonic anhydride on (PINNER and SCHAUMANN), 1881, A., 793.
- $\alpha\beta$ -dichloro- ( *$\alpha$ -chlorallylic chloride*), (CLAUS), 1874, 243.  
action of hypochlorous acid on (HENRY), 1882, A., 1039.
- $\alpha\gamma$ -dichloro- ( *$\beta$ -chlorallylic chloride*), and its derivatives (VAN ROMBURGH), 1882, A., 375.  
formation of, by dehydration of dichlorhydrin (HARTENSTEIN), 1873, 1218.
- nitro- (BRACKEBUSCH), 1874, 573.
- Propylene chlorhydrin** (REBOUL), 1874, 1154; (HENRY), 1875, 1179.  
action of dimethylamine on (MORLEY), 1880, A., 877.
- Propylene chlorhydrins**, constitution of the (HENRY), 1876, ii., 620.  
silicon derivatives of (CAHOUS), 1873, 871.
- Propylene compounds** (LINNEMANN), 1876, ii., 504.
- Propylene valerins** (REBOUL), 1874, 1153.
- Propylenediamine** (V. HOFMANN), 1873, 881.
- Propylenedipiperidine** (LADENBURG), 1882, A., 1194.
- Propylene-eugenol** (CAHOUS), 1877, ii., 478.
- Propyleneguanamines**, *n*- and *iso*- (NENCKI), 1876, ii., 187.

**Propyleneneurine chloride.** See Hydroxypropyldimethylamine methochloride.

*iso***Propyleneneurine.** See Hydroxypropyldimethylamine methylhydr-oxide.

**Propylenic bromide.** See Propane,  $\alpha\beta$ -dibromo-.

$\alpha$ -chloro-. See Propane,  $\alpha$ -chloro- $\alpha\beta$ -dibromo-.

bromiodide. See Propane, bromiodo-.

chloride. See Propane,  $\alpha\beta$ -dichloro-.

chlorobromide. See Propane, chlorobromo-.

chloriodide. See Propane,  $\beta\alpha$ -chloriodo-.

**Propylenic glycol** ( $\alpha\beta$ -dihydroxypropane) (FLAWITZKY), 1878, A., 965; (LOEBISCH and LOOSS), 1882, A., 377.

preparation of (HARTMANN), 1878, A., 211; (HANRIOT), 1878, A., 656; 1879, A., 1030; (BÉLOHOU-BEK), 1880, A., 232.

heat of combustion of (LUGININ), 1881, A., 10.

dehydration of (FLAWITZKY), 1879, A., 136.

decomposition of (LINNEMANN), 1878, A., 776.

**Propylenic glycol, active** (LE BEL), 1881, A., 1021.

*n*-**Propylenic glycol** (*trimethylenic glycol*) (REBOUL), 1874, 976; 1879, A., 132.

preparation of, from glycerol (FREUND), 1882, A., 156.

heat of combustion of (LUGININ), 1881, A., 9.

acetate, benzoate and ethers of (REBOUL), 1874, 1153.

chlorhydrins of (REBOUL), 1879, A., 133.

**Propylenic oxide** from active propylenic glycol (LE BEL), 1881, A., 1021. chloro-. See Epichlorhydrin.

*n*-**Propylenic oxide** and its polymerisation (REBOUL), 1874, 1154; 1879, A., 133; (TOLLENS), 1882, A., 1278.

**Propylethynyltricarboxylic acid.** See *n*-Pentametetracarboxylic acid.

**Propylethyl-**. See Ethylpropyl-

*iso***Propylethylene.** See  $\alpha$ -*iso*Amylene.

**Propyleugenols**, *n*- and *iso*- (CAHOURS), 1877, i., 461.

*iso***Propylglycoll.** See *iso*Valeric acid,  $\alpha$ -amido-.

**Propylglyoxaline** (WALLACH), 1882, A., 821.

**Propylglyoxylic acids** (*butyrylformic acid*), *n*- and *iso*-, and their amides (MORITZ), 1881, T., 13.

*m*-**Propylhydroxybenzene.** See *m*-*n*-Cumenol.

**Propylhydroxybenzoic acid.** See 6-Hydroxy-3:1-cuminic acid.

**Propylic alcohol** from glycerol (FITZ), 1880, A., 372; (DA SILVA), 1881, A., 1123.

heat of combustion of (LUGININ), 1880, A., 787.

specific heat and latent heat of vaporisation of (DIKONOFF), 1882, A., 355.

action of zinc chloride on (LE BEL and GREENE), 1879, A., 1029.

derivatives of (ROEMER), 1873, 1118; 1874, 39.

$\alpha\beta$ -diiodo- (HÜBNER and LELLMANN), 1880, A., 538; 1881, A., 242.

*iso***Propylic alcohol**, preparation of (FLAWITZKY), 1875, 626.

heat of combustion of (LUGININ), 1880, A., 787.

action of aluminium and aluminium iodide on (GLADSTONE and TRIBE), 1881, T., 6.

action of bleaching powder on (REGNAULT and HARDY), 1880, A., 456.

action of the copper-zinc couple on (GLADSTONE and TRIBE), 1873, 965.

*s*-dibromo-. See Glyceryl dibromhydrin.

$\alpha$ -chloro-. See Propylene chlorhydrin.

*s*-dichloro-. See Glyceryl dichlorhydrin.

trichloro- (v. GARZAROLI-THURN-LACKH), 1882, A., 295.

*s*-diiodo-. See Glyceryl diiodohydrin.

**Propylic allophanate** (CAHOURS), 1873, 872.

bromide, conversion of, into *iso*-propylic bromide by heat (ARONSTEIN), 1881, A., 567.

carbonate (CAHOURS), 1874, 38; (ROEMER), 1874, 39; (RÖSE), 1881, A., 252.

*o*-carbonate (RÖSE), 1881, A., 253.

chloroformate (ROEMER), 1874, 39; (RÖSE), 1881, A., 252.

cinnamate (ANSCHÜTZ and KINNICUTT), 1878, A., 981.

glycol. See Propylenic glycol.

iodide, physical properties of (BROWN), 1877, ii., 837.

action of the copper-zinc couple on, in presence of water or alcohol (GLADSTONE and TRIBE), 1873, 968.



- Propylic nitrate**, preparation of (WALLACH and SCHULZE), 1881, A., 572.  
 nitrite (CAHOURS), 1874, 39.  
 oxalate (CAHOURS), 1874, 37.  
 phenylacetate, and the action of sodium on (HODGKINSON), 1880, T., 483.  
 phenylcarbamate (ROEMER), 1874, 39.  
 santonate, and *p*-santonate (CARNELUTTI and NASINI), 1881, A., 181.  
 silicate (CAHOURS), 1873, 871.  
*d*-tartrate (ANSCHÜTZ and PICTET; ANSCHÜTZ), 1880, A., 876.  
 terephthalate (BERGER), 1878, A., 152.  
 thioacetate, boiling point of (WALLACH and BLEIBTREU), 1879, A., 786.  
*d*ithiocarbonate (ROEMER), 1873, 1118.  
*iso*Propylic borate (COUNCLER), 1878, A., 775.  
 bromide, conversion of *n*-propylic bromide into, by heat (ARONSTEIN), 1881, A., 567.  
 chloride, action of hydriodic acid on (DA SILVA), 1882, A., 294.  
 cyanate (DA SILVA), 1873, 367.  
 formate (DA SILVA), 1873, 367.  
 iodide, physical properties of (BROWN), 1877, ii., 837.  
   action of the dry copper-zinc couple on (GLADSTONE and TRIBE), 1873, 961.  
   action of triethylamine on (DUVILLIER and BUISINE), 1881, A., 1025.  
   action of zinc on (GLADSTONE and TRIBE), 1873, 965.  
 lactate (DA SILVA), 1873, 367.  
 nitrate, preparation of (WALLACH and SCHULZE), 1881, A., 572.  
 nitrosalicylate (CAHOURS), 1874, 38.  
*isopropyl*lactate (DA SILVA), 1873, 367.  
 salicylate (CAHOURS), 1874, 38.  
 terephthalate (BERGER), 1878, A., 152.  
 thioacetate, boiling point of (WALLACH and BLEIBTREU), 1879, A., 786.  
 thiocyanate (GERLICH), 1875, 1019.  
*isovalerate*, boiling point, density and rotatory power of (PIERRE and PUCHOT), 1873, 1017.  
**Propyldienic bromide**. See Propane, *aa*-*dibromo*-.  
 chloride. See Propane, *aa*-*dichloro*-.  
    $\beta$ -chloro-. See Propane, *aa* $\gamma$ -*trichloro*-.
- Propylite**, occurrence of, in Transylvania (DOELTER), 1881, A., 698.  
*iso*Propylmalonic acid (CONRAD and BISCHOFF), 1880, A., 627.  
**Propyl- $\psi$ -nitrole** (MEYER and LOCHER), 1874, 983; 1875, 445, 1182; 1876, i., 904; (MEYER), 1875, 559.  
**Propylnitrolic acid** (MEYER), 1875, 558.  
   constitution of (MEYER and LOCHER), 1874, 982, 983.  
   synthesis of (MEYER and LECCO), 1876, ii., 71.  
   action of light on (MEYER and LOCHER), 1874, 983.  
**Propylnitrous acid**. See Propane,  *$\alpha$ -dinitro*-.  
**Propylphenol**. See Cumenol.  
**Propylphenol** (*propoxybenzene*) (CAHOURS), 1874, 38.  
**Propylphenolcarboxylic acid**. See 6-Hydroxy-3:1-cuminic acid.  
*iso*Propylphenylacrylic acid. See Cumylacrylic acid.  
*iso*Propylphosphine (v. HOFMANN), 1873, 882.  
   *dichloro*- (MICHAELIS), 1881, A., 159.  
*iso*Propylphosphinic acid. See Propanephosphonic acid.  
 "Propylphycite," action of bromine on (CLAUS and LINDHORST), 1880, A., 862.  
**Propylpiperidine** (LADENBURG), 1882, A., 535, 1194.  
 $\alpha$ -Propylpiperidine. See Coniine under Alkaloids.  
**Propylpyrogallol**, dimethyl ether of. See Hydroxydimethoxypropylbenzene.  
*iso*Propylstilbene (MICHAEL), 1881, A., 1150.  

*p*-*iso*Propylstyrene. See *p*-Vinylisopropylbenzene.  
**Propylsuccinic acid** (WALTZ), 1882, A., 948.  
*iso*Propylsuccinic acid. See Pimelic acid.  
**Propylsulphonic acid**. See Propanesulphonic acid.  
**Propylisothioacetanilides**, *n*- and *iso*-, boiling points of (WALLACH and BLEIBTREU), 1879, A., 786.  
**Propyltoluenes**. See Cymenes.  
**Prosopite**, composition of (BRANDL), 1882, A., 1176.  
**Protagon**. See Lecithin.  
**Protalbin** (DANILEWSKY), 1878, A., 989; (DANILEWSKY and RADENHAUSEN), 1881, A., 449.  
**Protamine** in salmon roe (MIESCHER), 1874, 794; (PICCARD), 1875, 566.  
**Proteid** required by the average workman (BOWIE), 1880, A., 905.

**Proteid**, supposed transformation of the asparagine of Leguminosae into a (MERCADANTE), 1875, 900.

**Proteid metabolism.** See Metabolism.

**Proteid substances** (SCHÜTZENBERGER), 1875, 1039; 1876, i., 715, 717, 944; 1879, A., 542.

influence of, on electrocapillary phenomena (ONIMUS), 1874, 528.

injected into the veins, modification of, by the animal organism (BÉCHAMP and BALTUS), 1879, A., 334.

digested, substances analogous to ptomaines in (BÉCHAMP), 1882, A., 1115.

mechanism of putrid fermentation of (GAUTIER and ETARD), 1882, A., 1115.

new derivative of (SCHÜTZENBERGER), 1877, i., 725.

combination of, with chloral (PERSONNE), 1874, 355.

and their products of alteration, influence of, on the reduction of the cupro-potassium reagent (BÉCHAMP), 1876, i., 762.

**Proteids** (*albuminoids*) (NASSE), 1873, 760; 1874, 379; (ILIASIWETZ and HABERMANN), 1874, 172, 379, 702; (BÉCHAMP), 1874, 379; 1882, A., 984; (COMMAILLE), 1874, 992; (KNOP), 1876, i., 718; 1880, A., 362.

reactions of animal and vegetable (WEYL), 1876, ii., 644.

of blood serum (HEYNSIUS), 1875, 469; 1876, ii., 208; (FREDERICQ), 1882, A., 75.

rotatory power of, and their estimation by this means (FREDERICQ), 1882, A., 110.

from castor-oil seeds (RITTHAUSEN), 1879, A., 390; 1882, A., 876.

in cheese, transformation of, into fats (BLYTH), 1878, A., 680.

of crystallin (BÉCHAMP), 1880, A., 815.

of the *Vesicula seminalis* in guinea-pigs (LANDWEHR), 1882, A., 543.

of gourd seeds (BARBIERI), 1879, A., 272.

of the kidney substance, composition of (GOTTWALT), 1881, A., 661.

in koumiss, peptonisation of (DOCHMANN), 1882, A., 1221.

in plants, estimation of (SCHULZE), 1880, A., 764; 1882, A., 901.

in milk (DANILEWSKY and RADENHAUSEN), 1881, A., 449.

transformation of, into fats (BLYTH), 1878, A., 680.

**Proteids** (*albuminoids*) in whey (CHICHKOFF), 1880, A., 274.

from oil seeds (RITTHAUSEN), 1880, A., 676; 1881, A., 833; 1882, A., 234.

of the organs, and of the spleen in particular (PICARD), 1879, A., 175.

in plants (KELLNER), 1880, A., 279, 731.

in potatoes (SCHULZE and BARBIERI), 1878, A., 329; (HOLDEFLEISS), 1880, A., 568.

in pumpkin sprouts, decomposition of (SCHULZE and BARBIERI), 1880, A., 180.

constitution of (DANILEWSKY), 1882, A., 75.

alterability of (BIROT), 1875, 374.

fat-forming equivalent of (HENNEBERG), 1877, ii., 347.

products of the action of hydrochloric acid on (HORBACZEWSKI), 1880, A., 723.

behaviour of neurine to (MAUTHNER), 1875, 1206.

digestion of (SCHMIDT-MÜLHEIM), 1880, A., 484; (KELLNER), 1881, A., 296; (STUTZER), 1882, A., 1239.

products of the fermentation of (E. and H. SALKOWSKI), 1879, A., 659; 1880, A., 413.

decomposition of, in plants (SCHULZE), 1880, A., 493; 1881, A., 634.

decomposition of, in a vacuum (GRÉHANT and MODRZEJEWSKI), 1874, 1175.

decomposition of, by barium hydroxide (NASSE), 1873, 514; (LIEBERMANN), 1879, A., 735.

influence of borax on the decomposition of (GRUBER), 1880, A., 907; 1881, A., 453.

influence of glycerol on the decomposition of, in the animal body (TSCHIRWINSKY), 1880, A., 817.

gaseous nitrogen a product of the decomposition of, in the body (SEEGEN and NOWAK), 1880, A., 272.

decomposition-products of (KOHNS), 1879, A., 389; (BLEUNARD), 1880, A., 482.

influence of light on the formation of decomposition-products of, in the germination of the pumpkin (SABANIN and LIASKOWSKI), 1876, i., 415.

compounds of, with copper oxide (RITTHAUSEN and POTT), 1874, 702.

- Proteids** (*albuminoids*), compounds of, with salicylic acid (FARSKÝ), 1878, A., 224.  
 compounds of, with tannin (GIRGENSOHN), 1874, 192.  
 new reaction for (ADAMKIEWICZ), 1875, 919.  
 digestibility and estimation of (STUTZER), 1882, A., 1239.  
 estimation of, in fodder (SESTINI), 1878, A., 740; (WAGNER), 1880, A., 588; (SCHULZE), 1880, A., 588, 764; 1882, A., 901.  
 estimation of, in vegetable substances (DEHMEL), 1880, A., 352.  
 estimation of nitrogen in (SEEGEN and NOWAK), 1873, 1063; 1875, 192; (RITTHAUSEN), 1874, 296; (KREUSLER), 1874, 386, 1106; 1880, A., 350; (MÄCKER and ABESSER), 1874, 392; (LIEBERMANN), 1876, ii., 216; (RITTHAUSEN and SETTEGAST), 1878, A., 533.  
 See also Albumin, Casein, Fibrinogen, Globulins, Myosin, Peptones, Serum, Syntonin, and under Agricultural Chemistry.
- Protein**, relation of, to asparagine (SACHSSE), 1877, ii., 199.  
 digested, estimation of (KELLNER), 1880, A., 563.
- Protein compounds** (BAUMSTARK), 1874, 257; (STUTZER), 1880, A., 676.  
 products of the decomposition of (BLEUNARD), 1881, A., 1047.  
 estimation of the amount of, in vegetable substances (WANKLYN and COOPER), 1878, A., 247.  
 estimation and separation of, in plants (STUTZER), 1881, A., 660.
- Protein crystalloids** from *Bertholletia excelsa* (SACHSSE), 1877, ii., 200; (RITTHAUSEN), 1878, A., 518; (DRECHSEL), 1879, A., 950.
- Protocatechuic acid** (3:4-dihydroxybenzoic acid) (ARATA), 1878, A., 986; (BARTH and v. SCHMIDT), 1879, A., 933.  
 preparation of (STENHOUSE), 1875, 8.  
 preparation and properties of (MILLER), 1882, T., 398.  
 action of bromine on (STENHOUSE), 1874, 587; 1875, 7.  
 action of chlorine on (STENHOUSE), 1875, 10.  
 action of nitrous anhydride on (GRUBER), 1879, A., 643.  
 dimethyl ether of. See Veratric acid.  
 methyl ether of. See Vanillic acid.
- Protocatechuic aldehyde** (3:4-dihydroxybenzaldehyde), formation of (FITTIG and REMSEN), 1873, 1143.  
 preparation of, from pyrocatechol (TIEMANN and KOPPE), 1882, A., 54.
- Protocatechuic series** of compounds (TIEMANN), 1878, A., 577.
- Protopine** (*macleyine*) (EIJKMAN), 1882, A., 112.
- Protoplasm**. See under Agricultural Chemistry.
- Protoplasmic life**, power of certain substances to prevent the development of (CALVERT), 1873, 405.
- Protoquinamicine** (HESSE), 1878, A., 436; 1881, A., 925.
- Proustite** (STRENG), 1880, A., 302.
- Prussian-blue** (*ferriferrocyanide*) fixed on fabrics by means of an alkaline solution of ammonium tartrate (ANON.), 1875, 676.  
 soluble (*potassium ferriferrocyanide*) (SKRAUP), 1876, i., 377; 1877, ii., 597.
- Prussic acid**. See Hydrocyanic acid, under Cyanogen.
- Prussides**, nitro-. See Nitroprussides.
- Pseudobrookite**, a new mineral (KOCU), 1879, A., 441.
- Pseudochrysolites** (*bottle-stones*) of Moravia and Bohemia and of Trebitsch (MAKOWSKY; TSCHERMAK; v. HAUER), 1882, A., 581.
- Pseudo-gaylussite** (SCHMID), 1882, A., 582.
- Pseudometeorite**, so-called, composition of (COBENZL), 1881, A., 1171.
- Pseudomorphs**, zonal structure and formation of (GEINITZ), 1877, i., 698.  
 hollow, artificial production of (KNOR), 1881, A., 515.  
 mineral (GEINITZ), 1877, i., 691.
- Pseudotriplite** (VOM RATH), 1881, A., 550.
- Psilomelanes**, chemical constitution of the (LASPEYRES), 1876, i., 684.  
 See also Manganese dioxide.
- Psittacinite** (GENTH), 1877, i., 177.
- Psychosin** (THUDICHUM), 1882, A., 537.
- Ptomaines** (*cadaveric alkaloids*) (SELM), 1879, A., 734; (CASALI), 1881, A., 1046; (HUSEMANN), 1882, A., 246, 635.  
 formation of (PATERNO and SPICA), 1882, A., 741.  
 substances analogous to, in digested albuminoid matters (BÉCHAMP), 1882, A., 1115.

- Ptomaines** (*cadaveric alkaloids*), considered in relation to judicial chemistry and toxicology (HUSEMANN), 1881, A., 57; 1882, A., 1006.  
separation of, from plant alkaloids (BROUARDEL and BOUTMY), 1881, A., 749; (SPICA), 1882, A., 430; (BECKURTS), 1882, A., 1006.  
See also Alkaloids.
- Ptyalin** (WATSON), 1879, T., 540; (KJELDAHL), 1880, A., 562.  
action of, on starch, in presence of gastric juice (DEFRESNE), 1880, A., 330.  
acceleration of coagulation by (SCHMIDT), 1873, 186.
- Ptyalose**. See Maltose under Carbohydrates.
- Pucherite** (FRENZEL), 1873, 253; 1876, i., 51.  
from Schneeberg, crystalline forms of (WEBSKY), 1873, 1011.
- Puddling process**. See under Iron.
- Pulmonary concretion** (PHIPSON), 1875, 375.
- Pulvamic acid** (SPIEGEL), 1881, A., 97.
- Pulvic acid**, constitution and reactions of, and ethers and salts of (SPIEGEL), 1881, A., 97, 1036; 1882, A., 1076.
- Pulvic anhydride** (SPIEGEL), 1881, A., 97.
- Pumice** from Launsbach (v. KOENEN), 1881, A., 393.  
of Monte Somma (ROTH), 1882, A., 482.
- Pumices**, Vesuvian, collected on Monte Sant'Angelo, chemical composition of (RICCIARDI), 1882, A., 814.
- Pumice-glass** from Santorin, chemical composition of (FOUQUÉ), 1881, A., 560.
- Pumpkin**. See under Agricultural Chemistry.
- Punicin** (*purple of the ancients*) (BIZIO), 1873, 657; (A. and G. DE NEGRI), 1876, ii., 533; (SCHUNCK), 1879, T., 595; 1880, T., 613.
- Purple of Cassius** (*gold-purple*) (DEBRAY), 1873, 604.  
compound of platinum, tin and oxygen analogous to (DELACHANAL and MERMET), 1876, i., 48.  
detection of nitric acid in potable water by (VOGEL), 1876, i., 744.
- Purple yarn** from Nicaragua, examination of a sample of (SCHUNCK), 1880, T., 614.
- Purpura lapillus**, colouring matter of (SCHUNCK), 1879, T., 589; 1880, T., 613.
- Purpurates and isopurpurates** (KOPP), 1873, 75.
- Pupureo-**. See under word to which pupureo- is prefixed.
- Purpureochromium compounds**. See Chromammonium compounds under Chromium.
- Purpureocobalt compounds**. See Cobaltammonium compounds under Cobalt.
- Purpurin** (1:2:4-trihydroxyanthraquinone) (ROSENSTIEHL), 1875, 198; (SCHUNCK and ROEMER), 1877, i., 670; ii., 624; (DIEHL), 1878, A., 430; (v. PERGER), 1879, A., 256.  
synthesis of (DE LALANDE), 1875, 69.  
and analogous colouring matters, synthesis of (ROSENSTIEHL), 1875, 160.  
absorption-spectrum of (ROSENSTIEHL), 1879, A., 807.  
in alum solutions, displacement of the absorption-bands of (MORTON), 1881, A., 488.  
action of heat on (SCHUNCK and ROEMER), 1877, i., 674.  
a colouring matter found in commercial (SCHUNCK and ROEMER), 1877, i., 666.  
conversion of, into a dihydroxyanthraquinone (LIEBERMANN and FISCHER), 1876, i., 248.  
hydrate (ROSENSTIEHL), 1875, 198.  
detection of small quantities of alizarin in mixtures of alizarin and (SCHUNCK and ROEMER), 1877, i., 665.  
bromo- (SCHUNCK and ROEMER), 1877, i., 673; ii., 625; (LIEBERMANN and PLATH), 1878, A., 78; (ANON.), 1878, A., 737.
- isoPurpurin**. See Anthrapurpurin.
- ψ-Purpurin** (*purpurincarboxylic acid*) (ROSENSTIEHL), 1875, 197; (LIEBERMANN and PLATH), 1878, A., 77; (ANON.), 1878, A., 737.  
constitution of (ROSENSTIEHL), 1877, ii., 495.  
absorption-spectrum of (ROSENSTIEHL), 1879, A., 807.
- ε-Purpurin**, synthesis of (ROSENSTIEHL), 1877, i., 209; (SCHUNCK and ROEMER), 1877, i., 668; ii., 788.  
comparison of, with purpuroxanthin-carboxylic acid (SCHUNCK and ROEMER), 1878, A., 510.
- Purpurins**, isomeric, chronology of (MORTON), 1879, A., 943.



- Purpurinamide** (LIEBERMANN), 1877, i., 613; (SCHUNCK and ROEMER), 1878, T., 424.
- Purpurogallin** (*pyrogalloquinone*) and its derivatives (WICHELHAUS), 1873, 172; (DE CLERMONT and CHAUTARD), 1882, A., 839, 970, 1065.
- Purpuroxanthic acid.** See 1:3-Dihydroxyanthraquinonecarboxylic acid.
- Purpuroxanthin.** See 1:3-Dihydroxyanthraquinone.
- Purpuroxanthinecarboxylic acid.** See 1:3-Dihydroxyanthraquinonecarboxylic acid.
- Pus** from the human subject, certain constituents of (BRIEGER), 1882, A., 759.  
action of compressed oxygen on (BERT), 1878, A., 236.
- Putrefaction** (LAUJORROIS), 1873, 763; (KINGZETT), 1880, T., 15.  
theory of (TRAUBE and GSCHIEDLEN), 1874, 997.  
relation of bacteria to (BASTIAN), 1873, 406; 1874, 85.  
induced by bacteria in presence of alkali nitrates (MEUSEL), 1876, i., 413.  
part played in, by phosphorus and phosphates (LEFORT), 1874, 813.  
influence of the roots of living plants on (JEANNEL), 1876, i., 99.  
evolution of free nitrogen during (DIETZELL), 1882, A., 991, 1122.  
action of borax on (SCHNETZLER), 1875, 1286; 1876, i., 104, 990; (BEDOIN), 1876, ii., 543; (LE BON; DE CYON), 1880, A., 415.  
power of certain substances to prevent (CALVERT), 1873, 405.  
formation of cresols during (BAUMANN and BRIEGER), 1879, A., 789.  
testing the progress of, in manure heaps (MEDICUS), 1881, A., 937.
- Putrefaction products**, bases found in (NENCKI), 1882, A., 1307.
- Pyloric glands**, peptic action of (v. WITTICH), 1873, 515; 1874, 592.
- Pyrargyrite** (WEISBACH), 1878, A., 381; (STRENG), 1880, A., 304.  
from Andreasberg (VOM RATH), 1877, ii., 173.
- Pyrene** (FITTIG and GEBHARD), 1878, A., 432; (SMITH and DAVIS), 1880, T., 413.  
in idryl (GOLDSCHMIEDT), 1878, A., 155.  
fluorescent relations of (MORTON), 1875, 469.
- Pyrene**, vapour-density and crystalline form of (SMITH and DAVIS), 1880, T., 413.  
colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.  
amido-, and its salts, and *mono-* and *di-nitro-* (GOLDSCHMIEDT), 1882, A., 206.  
"Pyrethrine" (BUCHHEIM), 1877, ii., 195.
- Pyrethrum**, flowers of, constituents of (HAGER), 1878, A., 826; (DAL SIE), 1879, A., 808.
- Pyridine** (LAIBLIN), 1878, A., 433; (v. HOFMANN), 1879, A., 733; (v. GERICHTEN), 1881, A., 110; (HOOGWERFF and VAN DORP), 1881, A., 611.  
conversion of piperidine into (KÖNIGS), 1880, A., 404.  
conversion of pyrroline into (CIAMICIAN and DENNSTEDT), 1882, A., 867, 1214.  
constitution of (HARTLEY), 1882, T., 45.  
heat of formation of (RAMSAY), 1879, T., 696.  
action of bromine on (GRIMAU), 1882, A., 1215.  
bromide, hydrobromide of (GRIMAU), 1882, A., 1216.  
cyanide, and its salts (FISCHER), 1882, A., 627.  
3-bromo- (v. HOFMANN), 1879, A., 734; (DANESI), 1882, A., 867; (CIAMICIAN and DENNSTEDT), 1882, A., 1214.  
3:5-dibromo- (v. HOFMANN), 1879, A., 733; (v. GERICHTEN), 1882, A., 316; (SCHOTTEN), 1882, A., 983; (CIAMICIAN and DENNSTEDT), 1882, A., 1214.  
3:5-dibromo-, methylohydroxide of (v. GERICHTEN), 1882, A., 316.  
2-chloro-, and its salts (CIAMICIAN and DENNSTEDT), 1881, A., 826.
- Pyridine bases** (RICHARD), 1880, A., 480; (OECHSNER DE CONINCK), 1881, A., 56, 443; (v. HOFMANN), 1881, A., 921.  
derived from brucine (OECHSNER DE CONINCK), 1882, A., 1302.  
ebullition volume of (RAMSAY), 1879, T., 472.  
action of ethylene chlorhydrin on (WURTZ), 1882, A., 1303.  
isomerism in- (SKRAUP), 1881, A., 744.  
physiological action of (McKENDRICK and DEWAR), 1875, 1276.

**Pyridine-betaine** and its derivatives (V. GERICHTEK), 1882, A., 1109.

**2-Pyridinecarboxylic acid.** See Picolinic acid.

**3-Pyridinecarboxylic acid.** See Nicotinic acid.

**4-Pyridinecarboxylic acid.** See *iso-Nicotinic acid*.

**Pyridinecarboxylic acids** and their salts (HOOGEWERFF and VAN DORP), 1880, A., 405.

action of acetic acid on (HOOGEWERFF and VAN DORP), 1881, A., 744.

**Pyridine-2:3-dicarboxylic acid.** See Quinolinic acid.

**Pyridine-2:4-dicarboxylic acid** (*lutidinic acid*) and its salts (RAMSAY), 1879, A., 265; (BÖTTINGER), 1881, A., 612.

**Pyridine-2:5-dicarboxylic acid** (*isocinchomeric acid*) (RAMSAY and DOBBIE), 1878, T., 102; 1879, T., 189; (RAMSAY), 1879, A., 265; (WISCHNEGRADSKY), 1880, A., 269.

**Pyridine-3:4-dicarboxylic acid.** See Cinchomeric acid.

**Pyridinedicarboxylic acids,  $\beta$ - and  $\gamma$ -** (*dicarboxypyridenic acids*) (RAMSAY), 1879, A., 265.

**Pyridinedicarboxylic acids**, spectra of (HARTLEY), 1882, T., 46.

**Pyridine-3-sulphonic acid** and its salts (FISCHER), 1882, A., 627.

**Pyridine-2:3:4-tricarboxylic acid** (*carbo-cinchomeric acid*; *tricarboxypyridenic acid*) (RAMSAY and DOBBIE), 1879, T., 194; (HOOGEWERFF and VAN DORP), 1879, A., 541; 1880, A., 406, 895; 1881, A., 110; (SKRAUP), 1880, A., 410; 1882, A., 222; (WEIDEL and COBENZL), 1881, A., 744.

**Pyridine-2:4:5-tricarboxylic acid** (*berberonic acid*) and its salts (WEIDEL), 1879, A., 656; (FÜRTH), 1882, A., 230.

**Pyridine-2:4:6-tricarboxylic acid** (*trimesilic acid*) (BÖTTINGER), 1881, A., 181.

*iso***Pyrine** and  $\psi$ -*isopyrine* (V. HARTSEN), 1873, 511.

**Pyrites** (*iron pyrites*) from the Bockstein (V. ZEPHAROVICH), 1881, A., 232.

from Schwelm in Westphalia (ANON.), 1878, A., 708.

pseudomorphs from Příbram (VRBA), 1882, A., 575.

examples of the contemporaneous formation of, in thermal springs and in sea-water (DAUBRÉE), 1876, i., 533.

**Pyrites** (*iron pyrites*) used in France in the manufacture of sulphuric acid (GIRARD and MORIN), 1876, i., 120.

new process for the treatment of, in the dry way (SIMONIN), 1879, A., 563; (HOLLWAY), 1879, A., 755.

extraction of gold, silver, and other metals from (CLAUDET), 1873, 97; (DIXON), 1879, A., 288.

roasting of (BODE), 1873, 956.

composition of the gases obtained by burning (SCHEURER-KESTNER), 1875, 1237; 1876, ii., 120; (BODE), 1876, ii., 119; (LUNGE and SALATHÉ), 1878, A., 351.

treatment of the residue left in roasting (LEMOINE), 1874, 727.

preparation of sulphur from (HOFMANN), 1877, ii., 235.

arsenic in (HJELT), 1878, A., 173.

gold in (SCHWARZ), 1876, i., 890.

utilising the iron from (HOFMANN), 1876, i., 119.

mineralogical examination of (V. KOKSCHAROFF), 1881, A., 523.

valuation of, by the gravivolumetric method (HOTZEAT), 1880, A., 583.

source of error in the valuation of (GLEDINNING and EDGER), 1873, 531.

estimation of arsenic in (HJELT), 1878, A., 174.

estimation of copper and sulphur in (FRESENIUS), 1877, ii., 650; 1878, A., 529.

estimation of sulphur in (HOLLAND), 1873, 530; (DEUTECOM), 1880, A., 744; (LUNGE), 1881, A., 193, 764; (BOECKMANN), 1882, A., 993.

auriferous, examination of (CUMENGE and FRUCHS), 1879, A., 509.

cupreous iron, extraction of silver from (GIBB), 1875, 921.

method of estimating copper and sulphur in, and in the burnt ore before and after lixiviation (FRESENIUS), 1877, ii., 650; 1878, A., 529.

flue-dust, detection of some rare metals in (PLAYFAIR), 1879, A., 973.

magnetic. See Pyrrhotite.

**Pyrites-residues**, injurious effects produced by covering roads with (SARRAZIN), 1877, ii., 236.

**Pyroamaric acid** (ZININ), 1878, A., 153.  
**"Pyrobenzenic carbides"** (BERTHELOT), 1876, i., 242.

**Pyrocatechol** (*catechol*; 1:2-dihydroxybenzene) (ARATA), 1878, A., 986.

- Pyrocatechol** (*catechol*; 1:2-dihydroxybenzene) from creosote (BRÄUNINGER), 1878, A., 146.  
 simultaneous formation of organic acids and, from grapesugar (KRAUS), 1873, 1050.  
 formation of, in leaves in autumn (KRAUS), 1873, 1049.  
 presence of, in plants (VINES), 1878, T., 380; (PREUSSE), 1880, A., 417.  
 occurrence of, in the urine (BAUMANN), 1876, ii., 109.  
 formation of (DEMOLE), 1875, 253.  
 constitution of (HESSE), 1873, 387; (KÖRNER), 1876, i., 235; (FISCHLI), 1878, A., 866.  
 action of ethylic chloroformate on (BENDER), 1881, A., 48.  
 preparation of dihydroxybenzoic acids from (MILLER), 1882, T., 398.  
 dimethyl ether of. See Veratrol.  
 methyl ether of. See Guaiacol.  
 amido- and 4-(?)-nitro- (BENEDIKT), 1878, A., 575.  
*tetrabromo-*, action of bromine on, in presence of water (STENHOUSE), 1874, 586; 1875, 6.  
 3- and 4-(?)-nitro- (WESELSKY and BENEDIKT), 1882, A., 1200.
- Pyrocatechol-*o*-carboxylic acid.** See 2:3-Dihydroxybenzoic acid.
- Pyrocatecholphthalein** (v. BAEYER and CARO), 1875, 67.
- Pyrochlore** (KNOP), 1873, 479.
- Pyrocholesteric acid** (TAPPEINER), 1879, A., 388.  
 preparation of (TAPPEINER), 1880, A., 56.
- Pyrochroite** (SJÖGREN), 1878, A., 279; 1881, A., 697.
- Pyrocinchomeric acid.** See *iso*Nicotinic acid.
- Pyrocinchonic acid.** See Dimethylmaleic acid.
- Pyrocitric acids** (BÖTTINGER), 1877, i., 590.  
 derivatives of (MORAWSKI), 1875, 1252.  
 substituted crotonic acids from (MORAWSKI), 1878, A., 213.
- Pyroclaseite** (STELZNER), 1878, A., 120.
- Pyrocoll** and its salts (WEIDEL and CIAMICIAN), 1881, A., 295.  
 action of phosphorus *pentachloride* on (CIAMICIAN and DANESI), 1882, A., 875.  
 derivatives of (CIAMICIAN and DANESI), 1882, A., 233, 875.  
*mono-* and *di-*bromo- (CIAMICIAN and DANESI), 1882, A., 234.
- Pyrocondensation products** (ANSCHÜTZ), 1878, A., 983.
- Pyrocopal** or melted copal (SCHWARZ), 1878, A., 628.
- Pyrogallic acid.** See Pyrogallol.
- Pyrogallol** (1:2:3-trihydroxybenzene) (LOEW), 1877, ii., 477, 890.  
 for dry-plate development, preparation of (THORPE), 1881, A., 662.  
 attempted synthesis of (MAGATTI), 1882, A., 175.  
 action of chlorine on (STENHOUSE), 1875, 10; (STENHOUSE and GROVES), 1875, 704.  
 action of ethylic chloroformate on (BENDER), 1881, A., 48.  
 action of iodic acid on (JACQUEMIN), 1873, 1239.  
 action of iron salts on (JACQUEMIN), 1873, 1259; 1874, 1016.  
 action of ozone on (BOEKE), 1873, 1031.  
 action of phosphoryl chloride on, in presence of acetone (WITTENBERG), 1882, A., 1290.  
 action of sulphuric acid on (WITTENBERG), 1882, A., 1289.  
 action of quinone on (WICHELHAUS), 1873, 172.  
 oxidation of, in presence of free acid (DE CLERMONT and CHAUTARD), 1882, A., 839.  
 oxidation of, in presence of gum arabic (DE CLERMONT and CHAUTARD), 1882, A., 970.  
 absorption of oxygen by an alkaline solution of (WEYL and ZEITLER), 1881, A., 307; (WEYL and GOTH), 1882, A., 401.  
 compound of sodium and iron with a derivative of (WITTSTEIN), 1878, A., 145.  
 lead salt of (DEERING), 1873, 702.  
 potassium salt of, decomposition of nitric oxide by (RUSSELL and LAPRAIK), 1877, ii., 35.  
 ethers of, colouring matters from (v. HOFMANN), 1878, A., 871.  
 benzoyl derivatives of the dimethyl ethers of (v. HOFMANN), 1880, A., 249.  
 ethylene ether of, and its derivatives (MAGATTI), 1880, A., 250.  
 antiseptic action of (BOVET), 1880, A., 73.  
 some reactions of (ENGEL), 1876, i., 943.  
 estimation of (PRUD'HOMME), 1875, 1054.  
*tribromo-*, action of bromine on, in presence of water (STENHOUSE), 1874, 586; 1875, 1.

- Pyrogallol** (1:2:3-*trihydroxybenzene*), nitro- (WESELSKY and BENEDIKT), 1882, A., 1200.
- Pyrogallolcarboxylic acid.** See Gallic acid.
- Pyrogalloldicarboxylic acid** (*gallo-carboxylic acid*) and its salts (SENHOFER and BRUNNER), 1881, A., 267.
- Pyrogallolsulphonic acid** (SCHIFF), 1876, i., 261.
- Pyrogalloquinone.** See Purpurogallin.
- Pyrogenetic acid.** See Quinol.
- Pyroguaiacol** and its derivatives and tribromo- (WIESER), 1881, A., 812.
- Pyroligneous acid**, manufacture of sodium acetate and of pure acetic acid from (DOLLFUS), 1876, i., 989.  
calcium salt of, analysis of (FRESENIUS), 1875, 104.  
lead salt of, quick method of analysing (FRESENIUS), 1874, 921.  
See also Acetic acid.
- Pyrology** (ROSS), 1873, 537.
- Pyrolusite** (HANNAY), 1878, T., 269.  
artificial formation of (HANNAY), 1881, A., 353.  
action of carbonic oxide, carbon and hydrogen on (WRIGHT and LUFF), 1878, T., 518.  
See also Manganese dioxide.
- Pyromecazone**, and its nitro-compound (OST), 1882, A., 601.
- Pyromecazonic acid** and its salts (OST), 1879, A., 708; 1882, A., 601.
- Pyromeconic acid** and its salts (IHLÉE), 1878, A., 34; (OST), 1879, A., 307, 708.  
amido- (OST), 1879, A., 709.  
nitro-, and its salts (OST), 1879, A., 307, 709.
- Pyromelic acid** obtained by the electrolysis of an alkaline solution with carbon electrodes (BARTOLI and PAPASOGLI), 1882, A., 850.
- Pyromellitic acid**, compounds of, with  $\alpha$ -naphthol (GRABOWSKI), 1874, 64.
- Pyrometer.** See under Thermochemistry.
- Pyromorphite** from Dernbach, near Montabaur, Nassau (HILGER), 1880, A., 858.  
See also Lead phosphate.
- Pyromucamide** (CIAMICIAN and DENNSTEDT), 1881, A., 801.
- Pyromucethylamide** (WALLACH), 1881, A., 715.
- Pyromucic acid** (*furfuran- $\alpha$ -carboxylic acid*) (LIMPRICHT), 1873, 624.  
action of bromine on (TÖNNIES), 1878, A., 785.
- Pyromucic acid** (*furfuran- $\alpha$ -carboxylic acid*), derivatives of (WALLACH), 1881, A., 714; (CIAMICIAN and DENNSTEDT), 1881, A., 801.  
*tetrabromide* (TÖNNIES), 1878, A., 786.  
bromo- (SCHIFF and TASSINARI), 1878, A., 721; 1879, A., 308.  
*di*bromo- (TÖNNIES), 1878, A., 786.  
relation of, to mucobromic acid (TÖNNIES), 1879, A., 918.  
nitro- (KLINKHARDT), 1882, A., 499.
- isoPyromucic acid** (LIMPRICHT), 1873, 625.
- Pyromucyl chloride** (WALLACH), 1881, A., 715.
- Pyrope** (SCHARIZER), 1881, A., 544.
- Pyrophosphonodinaphtholdisulphonic acid** (CLAUS and ZIMMERMANN), 1881, A., 914.
- Pyrophosphoric acid** and **pyrophosphates.** See under Phosphorus.
- Pyrophotosantoniac acid** and its salts (SESTINI and DANESI), 1882, A., 627.
- Pyrophyllite** (HELMHACKER), 1881, A., 541.  
from Schuylkill Co., Pennsylvania (GENTH), 1881, A., 378.
- Pyropissite**, composition of (SCHWARZ), 1879, A., 1021.
- Pyroracemic acid.** See Pyruvic acid.
- Pyroretin** (DOELTER), 1881, A., 359.
- Pyrosclerite** from the limestone quarry of St. Philipp near S. Marie aux Mines, Alsace (KNOP), 1875, 620.  
hydrated unisilicate approaching (LEEDS), 1874, 28.
- Pyrosmalite** (GROTH), 1875, 543.
- Pyrostilpnite** (*fireblende*) (STRENG), 1880, A., 304.
- Pyrosulphuric acid.** See under Sulphur.
- Pyrotartaric acid.** See Methylsuccinic acid.
- n-Pyrotartaric acid.** See Glutaric acid.
- $\alpha$ -isoPyrotartaric acid.** See Ethylmalonic acid.
- $\beta$ -isoPyrotartaric acid.** See Dimethylmalonic acid.
- Pyroterebic acid.** See Hexenoic acid.
- Pyrotritaric acid** (*pyrotritaric acid*; *uric acid*) and its salts (HARROW), 1878, T., 425.  
from pyruvic acid (BÜTTINGER), 1873, 1222; 1874, 1159; 1881, A., 155.
- Pyrousnetic and pyrousnic acids** (PATERNO), 1882, A., 1079.
- Pyroxanthin** and its derivatives (HILL), 1877, ii., 746; 1878, A., 517; 1882, A., 306.  
*di*bromo-, and its *tetrabromide* (HILL), 1878, A., 517; 1882, A., 307.



**Pyroxene.** See Augite.

**Pyroxilin** (WOLFRAM), 1879, A., 218, 372.

conversion of hydrocellulose into (GIRARD), 1879, A., 911; 1882, A., 381.

composition of (EDER), 1880, A., 372.  
See also Cellulose nitrates under Carbohydrates and Gun-cotton.

**Pyrrotite** (*magnetic pyrites*), composition of (LINDSTRÖM), 1876, ii., 384; (HILGER), 1877, ii., 853; (HABERMEHL), 1881, A., 516.

crystals of (STRENG), 1880, A., 306.

twin-crystal of (DANA), 1877, i., 583.  
from America (HOW), 1878, A., 475.

from Elizabeth Town, Ontario (HARRINGTON), 1877, i., 285.

in dolerite from Ovivak (SMITH), 1879, A., 894.

**Pyrrole** (*pyrrhol*). See Pyrroline.

**Pyrroline** (BELL and LAPPER), 1879, A., 524; (BERNTHSEN), 1880, A., 713.

formation of (BÖTTINGER), 1881, A., 614.

formation of, from succinimide (BELL), 1880, A., 630.

synthetic preparation of (BELL), 1879, A., 526.

constitution of (SCHIFF), 1878, A., 216.

heat of formation of (RAMSAY), 1879, T., 696.

boiling point of (WEIDEL and CIAMICIAN), 1880, A., 404.

ebullition volume of (RAMSAY), 1879, T., 472.

action of nascent hydrogen on (CIAMICIAN and DENNSTEDT), 1882, A., 1214.

conversion of, into pyridine (CIAMICIAN and DENNSTEDT), 1882, A., 867, 1214.

derivatives of (BELL), 1879, A., 525; (CIAMICIAN), 1882, A., 212.

potassium derivative of, action of chloroform on (CIAMICIAN and DENNSTEDT), 1881, A., 826.

reaction of, with chlorinated compounds and bromine (CIAMICIAN), 1882, A., 213.

action of halogenated organic radicles on (CIAMICIAN and DENNSTEDT), 1882, A., 606.

**Pyrrolinecarbamide** (*tetrenc-* or *tetrol-carbamide*) (CIAMICIAN and DENNSTEDT), 1882, A., 606.

**Pyrrolinecarboxylic acid.** See  $\alpha$ -Carboxypyrrolic acid.

**Pyrrol-red**, formation of, from pyromucic acid (LIMPRICHT), 1873, 624.

**Pyruvic acid** (*pyroracemic acid*) (BÖTTINGER), 1873, 1128; 1875, 1176; 1876, i., 66; 1878, A., 31; 1879, A., 524; (BAUMANN and PREUSSE), 1882, A., 758.

conversion of *aa*-dichloropropionic acid into (BECKURTS and OTTO), 1877, ii., 181; 1878, A., 488.

formation of, from tartaric acid (BOUCHARDAT), 1879, A., 916.

synthesis of (CLAISEN and SHADWELL), 1879, A., 45.

structure of, and action of phosphorus pentachloride on (v. RICHTER), 1877, ii., 439.

reactions of (DE CLERMONT), 1873, 495.

action of ammonia and amido-derivatives on (BÖTTINGER), 1877, ii., 320.

action of aniline on (BÖTTINGER), 1877, ii., 596.

action of anthranilic acid on (BÖTTINGER), 1877, ii., 322.

action of benzonitrile and benzylic cyanide on (BÖTTINGER), 1881, A., 1032.

action of hydrocyanic acid on (BÖTTINGER), 1877, i., 455.

action of hydroxylamine on (MEYER and JANNY), 1882, A., 1048.

action of phosphorus pentachloride on (BÖTTINGER), 1873, 1221; (v. RICHTER), 1877, ii., 441.

action of phosphorus pentasulphide on (BÖTTINGER), 1879, A., 45.

action of sodium thiosulphate on (BÖTTINGER), 1882, A., 1051.

decomposition of (BÖTTINGER), 1874, 1158.

condensation products of (BÖTTINGER), 1876, ii., 400; 1878, A., 31.

formation of *aa*-dichloropropionic acid from (BECKURTS and OTTO), 1878, A., 488.

conversion of, into lactic acid (BÖTTINGER), 1878, A., 32.

amide of (*acetylformamide*) (CLAISEN and SHADWELL), 1879, A., 45.

compounds of, with the sulphites of the alkalis and alkaline earths (CLEWING), 1878, A., 783.

sulphur compounds of (BÖTTINGER), 1876, ii., 70.

barium salt of, decomposition of, by boiling with water (BÖTTINGER), 1876, i., 566.

*di-* and *bis*-bromo- (GRIMAUX), 1874, 887.

- Pyruvic acid** (*pyroracemic acid*), *di-bromo-*, action of benzene on (BÖTINGER), 1881, A., 814.  
*trichloro-* (*trichloroacetylcarboxylic acid*) (HOFFERICHTER), 1880, A., 35.  
 synthesis of, and of its amide (CLAISEN and ANTWEILER), 1881, A., 153.  
 thio- (DEWAR), 1873, 74.  
 reaction of, with bromine (DE CLERMONT), 1873, 495.
- Pyruvic alcohol.** See Acetylcarbinol.
- Pyruvic aldehyde**, probable formation of, by the action of bromine, and silver oxide on acetone (LINNE-MANN), 1874, 1157.
- Pyruvic series**, synthetical production of new acids of (CLAISEN and MORITZ), 1880, T., 691; (MORITZ), 1881, T., 13.
- Pyruvic ureide**, nitro- (GRIMAU), 1875, 359, 450.
- Pyruvic ureides** (GRIMAU), 1874, 1160; 1875, 358, 359, 449; 1877, ii., 740.

## Q.

- Quantitative analysis.** See Analysis.
- Quartz** (FRENZEL), 1876, i., 51; (ROSTER), 1878, A., 282.  
 some remarkable modes of occurrence of (WEBSKY), 1874, 673.  
 from Alexander Co. (HIDDEN), 1881, A., 1110.  
 from the Eleanore mine, on the Dünstberge, near Giessen (STRENG), 1881, A., 25.  
 from Kreinitz (VOM RATH), 1878, A., 944.  
 from Krummendorf, growth-phenomena of (SCHUMACHER), 1879, A., 901.  
 from Lizzo (v. LASAULX), 1875, 1244; 1876, ii., 489.  
 Moravian (VOM RATH), 1881, A., 550.  
 and calcspar, remarkable intergrowths of, from Schneeberg in Saxony (FRENZEL and VOM RATH), 1875, 873.  
 from the Vette di Viesena (DOELTER), 1876, i., 888.  
 from Wallis (WEISS), 1873, 857.  
 crystallised, artificial production of (FRIEDEL and SARASIN), 1881, A., 346.  
 formation of, in the dry way (HAUTEFEUILLE), 1878, A., 704.

- Quartz** formed by volcanic sublimation (VOM RATH), 1873, 251.  
 simultaneous reproduction of orthoclase and (HAUTEFEUILLE), 1880, A., 532.  
 influence of temperature on the circular polarisation of (v. LANO), 1876, ii., 265.  
 crystalline forms of, and the trapezohedral tetartohedry of the hexagonal system (KENNGOTT), 1875, 625.  
 transition-faces of (SCHARFF), 1874, 673.  
 "etch-figures" on (BAUMHAUER), 1879, A., 439.  
 signification of the rhombohedral and prismatic planes in (BAUMHAUER), 1878, A., 390.  
 twin, with inclined axes, from Japan (VOM RATH), 1875, 1244.  
 behaviour of, with microcosmic salt (LAUFER), 1879, A., 79.  
 pseudomorphs of, after calcite and fluorspar (GEINITZ), 1877, i., 693.  
 fibrous (FISCHER), 1874, 555.  
 from South Africa, a pseudomorph after crocidolite (WIBEL), 1873, 739, 1209.  
 iridescent (VOM RATH), 1874, 555.  
 mealy (FRENZEL), 1882, A., 474.  
 pyrogenic, in the lavas of the Lower Rhine (LEHMANN), 1878, A., 477.  
 rose (VOM RATH), 1881, A., 550.  
 separation of, from silicates (WUNDERLICH), 1882, A., 894.  
 separation of, from mixtures with silicates (LAUFER), 1878, A., 336.  
 See also Rock crystal and Silicon dioxide.
- Quartz cat's-eye** (HORNSTEIN), 1877, ii., 411.
- Quartz-diorite** from Minnesota (STRENG and KLOOS), 1877, ii., 580, 722.  
 from Yosemite (SCHMIDT), 1879, A., 512.
- Quartzite** (SCHUMACHER), 1881, A., 698.  
 limestone and associated rocks of Great Barrington, Massachusetts (DANA), 1873, 257.
- Quassiin**, and bromo-derivative of (CHRISTENSEN), 1882, A., 1302.
- Quassin** (GOLDSCHMIEDT and WEIDEL), 1878, A., 80.
- Quebrachamine** (HESSE), 1882, A., 743.
- Quebrachicatechin** (ARATA), 1881, A., 1153.
- Quebrachine**, and its salts (HESSE), 1881, A., 294; 1882, A., 742.

- Quebrachitannic acid** (JEAN), 1877, ii., 897; (ARATA), 1881, A., 1152.
- Quebracho**, a new tanning material (JEAN), 1877, ii., 897; (ARNAUDON), 1877, ii., 951.
- Quebracho bark**, test for (FRAUDE), 1881, A., 473.
- Quebracho Colorado** (*Loxopterygium Lorentzii*), two alkaloids from the bark of (HESSE), 1882, A., 744.
- Quebracho gum** (ARATA), 1878, A., 986.
- Quebracho wood**, tannin from (ANON.), 1879, A., 996.
- Quebrachol**, and its derivatives (HESSE), 1882, A., 744.
- Quercetagetin** (LATOUR and MAGNIER DE LA SOURCE), 1878, A., 80.
- Quercetin** (LOEWE), 1874, 171; 1876, i., 708.  
formule and derivatives of (LIEBERMANN and HAMBURGER), 1879, A., 944.
- Querciglucol** (GAUTIER), 1881, A., 272.
- Quercitan** (PRUNIER), 1878, A., 400; 1879, A., 241.  
chlorhydrin (PRUNIER), 1878, A., 400.
- Quercitannic acid** (ETTI), 1881, A., 277.
- Quercitol**. See under Carbohydrates.
- Quercitolsulphuric acid**, and a sugar different from quercitol derived therefrom (SCHEIBLER), 1873, 166.
- Quercitrin** (LOEWE), 1874, 171; 1876, i., 708.  
*tetrabromo-* (LIEBERMANN and HAMBURGER), 1879, A., 945.
- Quick silver**. See Mercury.
- Quinacetophenone** (*2:5-dihydroxyacetophenone*) (NENCKI and SIEBER), 1881, A., 812.  
nitro- (NENCKI and SIEBER), 1881, A., 591.
- Quinaldine** (*2'-methylquinoline*) (KÖRNER), 1882, A., 739; (DOEBNER and V. MILLER), 1882, A., 868.
- Quinamicine, quinamidine and quinamine**. See under Alkaloids.
- Quinethonic acid** (*chinacthonic acid*) (KOSSEL), 1881, A., 631.
- Quinetin**, Marchand's (RAMSAY and DOBBIE), 1878, T., 104.
- Quinhydrone**, constitution of (WICHELHAUS), 1873, 172; 1878, A., 63, 146; 1880, A., 41; (HESSE), 1873, 388; 1880, A., 318; (LIEBERMANN), 1878, A., 63, 145; (NIETZKI), 1878, A., 146; 1880, A., 247.
- Quinic acid** (FITTIG and HILLEBRAND), 1879, A., 159.
- Quinic acid**, preparation of, from hay (LOEW), 1879, A., 952; 1880, A., 173.  
constitution of (FITTIG and HILLEBRAND), 1877, ii., 488.  
etherification of (MENSCHUTKIN), 1882, A., 487.  
schizomycetic fermentation of (LOEW), 1881, A., 602.  
reactions of (HESSE), 1880, A., 317.  
and acetic acids, double salts of (GUNDELACH), 1876, ii., 415, 637.  
physiological action of (RABUTEAU), 1873, 398.
- Quinicine, quinidine and quinine**. See under Alkaloids.
- Quinic acid** (*3-methoxyquinoline-4'-carboxylic acid*) and its salts (SKRAUP), 1879, A., 810; 1882, A., 220.  
action of hydrochloric acid on, and oxidation of (SKRAUP), 1882, A., 222.
- Quininum dimuriaticum carbamidatum** (DRYGIN), 1879, A., 169.
- Quiniretin** (FLÜCKIGER), 1878, A., 588.
- Quinizarin** (*1:4-dihydroxyanthraquinone*), formation of (V. BAEYER and CARO), 1875, 68.  
reduction of (LIEBERMANN and GIESEL), 1877, ii., 494; (LIEBERMANN and TOPF), 1882, A., 856.
- Quinoidine borate**, crystalline (V. JOBST), 1881, A., 56.  
a new febrifuge (DE VRIJ), 1881, A., 1154.
- Quinol** (*benzoquinol*; *1:4-dihydroxybenzene*; *hydroquinone*; *pyrogenetic acid*) (HESSE), 1873, 386; 1880, A., 317; (HLASIWETZ), 1875, 1191; (KRAUSE), 1879, A., 462; (HANTZSCH), 1881, A., 166; (BERNHEIMER), 1881, A., 287; 1882, A., 232.  
preparation of (WESELSKY and SCHULER), 1877, i., 78; (HEPP), 1878, A., 62; (NIETZKI), 1878, A., 315.  
constitution of (KÖRNER), 1876, i., 235; (FISCHL), 1878, A., 866.  
action of ethylic chloroformate on (BENDER), 1881, A., 48.  
action of, on phthalic acid (V. BAEYER and CARO), 1875, 68.  
reaction of, with potassium hydrogen carbonate (SENHOFFER and SARLAY), 1881, A., 1140.  
some alcohols and aldehydes derived from (HANTZSCH), 1881, A., 166.  
derivatives (NIETZKI), 1878, A., 499, 866; 1879, A., 464; (TIEMANN and MÜLLER), 1882, A., 52.

- Quinol** (*benzoquinol*; 1:4-dihydroxybenzene; *hydroquinone*; *pyrogallistic acid*), ethyl ether. See *p*-Hydroxyethoxybenzene.  
methyl ether. See *p*-Hydroxy-methoxybenzene.
- Quinol**, bromo- (WICHELHAUS), 1880, A., 42.  
*mono*-, *di*-, *tri*- and *tetra*-bromo- (SARAUW), 1880, A., 385; 1881, A., 1135.  
2:5-(*l*-)*di*bromo- (SARAUW), 1882, A., 400.  
2:6-*di*bromo- (BÖHMER), 1882, A., 398.  
*mono*-, *di*-, *tri*-, and *tetra*-chloro- (LEVY and SCHULTZ), 1880, A., 888; 1882, A., 509.  
2:5-(*l*-)chlorobromo- (LEVY and SCHULTZ), 1882, A., 509.  
2:5-dinitro- (NIETZKI), 1878, A., 499.  
*di*thio- (KÖRNER and MONSELISE), 1877, i., 81.
- Quinol diacetate** (SARAUW), 1879, A., 718; (HESSE), 1880, A., 317.  
*mono*-, and 2:5-*di*-chloro- (LEVY and SCHULTZ), 1880, A., 888; 1882, A., 509; (SCHULZ), 1882, A., 838.  
2:5-dinitro- (HESSE), 1880, A., 317.
- Quinolcarboxylic acid**. See 2:5-Dihydroxybenzoic acid.
- Quinoldicarboxylic acid**. See 3:6-Dihydroxyterephthalic acid.
- Quinoldisulphonic acid**, and its potassium salt (LIMPRICHT), 1882, A., 1075.
- Quinoleic acid** (*pyridine*-2:3-*dicarboxylic acid*). See Quinolinic acid.
- Quinolglycerin** (REICHL), 1880, A., 426.
- Quinolic acid** (WEIDEL), 1875, 88.  
action of nitric acid on (WEIDEL and v. SCHMIDT), 1879, A., 947.
- Quinoline** (*chinoline*; *leucoline*) (BUTLEROFF and WISCHNEGRADSKY), 1878, A., 988; (KRETSCHY), 1880, A., 44; 1881, A., 829; (CLAUS and HIMMELMANN), 1881, A., 182; (KRAKAU), 1881, A., 287, 655.  
of tar (DEWAR), 1881, A., 1043.  
preparation of (KOENIGS), 1880, A., 672.  
constitution of (v. BAEYER), 1879, A., 946; (HARTLEY), 1882, T., 47.  
synthesis of (KOENIGS), 1879, A., 540; 1880, A., 672; (v. BAEYER), 1879, A., 946; (BÖTTINGER), 1881, A., 182; (SKRAUP), 1881, A., 287, 919.
- Quinoline** (*chinoline*; *leucoline*), crude, fractional distillation of (OECHSNER DE CONINCK), 1881, A., 612.  
action of antimony *pentachloride* on (SMITH and DAVIS), 1882, T., 413.  
action of benzylic chloride on (CLAUS and HIMMELMANN), 1881, A., 182.  
action of bromine on (GRIMAU), 1882, A., 1215.  
action of chloroacetic acid on (v. GERICHTEN), 1882, A., 1110.  
action of ethylene chlorhydrin on (WURTZ), 1882, A., 1303.  
action of nascent hydrogen on (CLAUS and HIMMELMANN), 1881, A., 183.  
action of sodium on (WILLIAMS), 1879, A., 432; 1881, A., 613.  
oxidation of (DEWAR), 1877, ii., 499; 1881, A., 1044; (HOOGWERFF and VANDORP; KOENIGS), 1879, A., 731; (SKRAUP), 1880, A., 409.  
reduction of (CLAUS and HIMMELMANN; WISCHNEGRADSKY), 1881, A., 444.  
transformation of, into aniline (DEWAR), 1877, ii., 499.  
products of the transformation of (KÖRNER), 1882, A., 739.  
reactions (KRAKAU), 1881, A., 287, 655.  
physiological and physiologic-chemical effects of (DONATH), 1881, A., 298; 1882, A., 214.
- Quinoline additive-products** (LA COSTE), 1882, A., 950, 1112.
- Quinoline bases**, physiological action of (MCKENDRICK and DEWAR), 1875, 1276.
- Quinoline derivatives** (WEIDEL and COBENZL), 1881, A., 742; (BEDALL and FISCHER), 1882, A., 412; (BEREND), 1882, A., 530; (CLAUS and ISTEI), 1882, A., 1111.
- Quinoline benzyl chloride** (CLAUS and HIMMELMANN), 1881, A., 182.  
bromide, hydrobromide of (GRIMAU), 1882, A., 1215.  
cyanide (BEDALL and FISCHER), 1882, A., 413.  
*di*iodide (CLAUS and ISTEI), 1882, A., 1111.  
methoxide (LA COSTE), 1882, A., 980.  
salicylate (FRIESE), 1882, A., 868.  
tartrate (FRIESE), 1882, A., 868.
- Quinoline**, 1-amido- (BEDALL and FISCHER), 1882, A., 413.  
3-bromo- (LA COSTE), 1882, A., 978.  
3'-bromo- (LA COSTE), 1881, A., 741.  
methoxide (LA COSTE), 1882, A., 980.



- Quinoline**, 1:3-*di*bromo- (LA COSTE), 1882, A., 978.  
 1:4-*di*bromo-, methiodide (LA COSTE), 1882, A., 980.  
 3:3'-*di*bromo- (LA COSTE), 1881, A., 741.  
*α*-*tetra*bromo- (CLAUS and ISEL), 1882, A., 1110.  
 2'-chloro- (FRIEDLÄNDER and OSTERMAIER), 1882, A., 732.  
 3-chloro-, and 1:3- and 1:4-*di*chloro- (LA COSTE), 1882, A., 978.  
 2':3'-*di*chloro- (v. BAeyer), 1879, A., 916.  
*tri*chloro- [m.p. 160°·5] (FRIEDLÄNDER and WEINBERG), 1882, A., 1210.  
 cyano- (BEDALL and FISCHER), 1882, A., 869.  
 1-nitro- (KOENIGS), 1879, A., 540.  
 1:3-*di*nitro- (LA COSTE), 1882, A., 979.
- Quinolinebenzcarboxylic acid**. See *p*-Quinolinecarboxylic acid.
- Quinoline-blue**. See Cyanine under Colouring matters.
- o*-Quinolinecarboxylic acid and its salts (SCHLOSSER and SKRAUP), 1882, A., 72; (LA COSTE), 1882, A., 981.
- m*-Quinolinecarboxylic acid and its salts (SCHLOSSER and SKRAUP), 1882, A., 71.
- p*-Quinolinecarboxylic acid and its salts (SCHLOSSER and SKRAUP), 1882, A., 72; (BEDALL and FISCHER), 1882, A., 413.
- Quinoline-3'-carboxylic acid** (GRAEBE and CARO), 1880, A., 398.
- Quinoline-4'-carboxylic acid**. See Cinchonic acid.
- Quinoline-2':3'-dicarboxylic acid** (*acridinic acid*) and its salts (GRAEBE and CARO), 1880, A., 398.
- Quinoline molecule**, an additional evidence, by analysis of, that this base belongs to the aromatic series of organic substances (SMITH and DAVIS), 1882, T., 412.
- Quinoline series**, studies on (DEWAR), 1877, ii., 499; 1881, A., 1043.  
 synthesis of (SKRAUP), 1881, A., 919; 1882, A., 1216; (SCHLOSSER and SKRAUP), 1882, A., 71.  
 and pyridine series, isomerism in (SKRAUP), 1881, A., 744.
- "**Quinolinic acid**" [m.p. 143°] (DEWAR), 1881, A., 1043.
- Quinolinic acid** (*pyridine-2:3-dicarboxylic acid*), and its salts (RAMSAY), 1879, A., 265; (KOENIGS), 1879, A., 731; (SKRAUP), 1881, A., 919; (DEWAR), 1881, A., 1043.
- Quinolphtalein** (GRIMM), 1873, 1234; (EKSTRAND), 1878, A., 675.  
*pentabromo*- (EKSTRAND), 1878, A., 676.
- Quinone** (*benzoquinone*), preparation of (NIETZKI), 1878, A., 315, 794.  
 constitution of (GRAEBE), 1873, 897.  
 action of acetic anhydride and sodium acetate on (SARAUW), 1879, A., 718; 1881, A., 1136.  
 action of diphenylamine on (PLIMPTON), 1880, T., 644.  
 reaction of, with pyrogallol (WICHELHAUS), 1873, 172.  
 action of acid chlorides and bromides on (SCHULZ), 1882, A., 838.  
*tetra*hydride (HERRMANN), 1882, A., 713.  
*bromo*- (v. BAeyer and SCHRAUBER), 1880, A., 657.  
*mono*-, 2:5-*di*-, *tri*- and *tetra*-*bromo*- (SARAUW), 1881, A., 1135.  
 2:6-*di*bromo- (LEVY and SCHULTZ), 1882, A., 509.  
*tetra*bromo- (*bromanil*) (SARAUW), 1879, A., 718; 1881, A., 1136; (HERRMANN), 1882, A., 714.  
*mono*- and 2:5-*di*-chloro- (LEVY and SCHULTZ), 1880, A., 888; 1882, A., 509.  
 2:6-*di*chloro- (ARMSTRONG and BROWN), 1874, 1165.  
*tri*- and *tetra*-chloro- (*chloranil*) (LEVY and SCHULTZ), 1880, A., 888.  
 conversion of *p*-amidophenol into (SCHMITT and ANDRESEN), 1882, A., 611.  
 action of ammonia and amines on (NEUHÖFFER and SCHULTZ), 1878, A., 62; (v. KNAPP), 1881, A., 812; (v. KNAPP and SCHULTZ), 1882, A., 510.  
*tetrachloro*- (*chloranil*), formation of, from isomeric amidobenzoic acids (WIDMANN), 1879, A., 154.  
 2:5-(*?*)-chlorobromo- (LEVY and SCHULTZ), 1882, A., 509.  
 2:5-*di*chloro-*di*bromo- (KRAUSE), 1879, A., 462.  
 nitro- (ETARD), 1881, A., 583.  
*tetra*nitro- (NIETZKI), 1878, A., 426.
- Quinones**, preparation of (NIETZKI), 1878, A., 315.  
 application of the aldehyde and ammonia reaction in determining the constitution of (JAPP and STREATFIELD), 1882, T., 157.  
 action of ammonia and amines on (NEUHÖFFER and SCHULTZ), 1878, A., 62; (ZINCKE), 1880, A., 48; 1881, A., 595, 915; 1882, A., 735,

- 967; (V. KNAPP), 1881, A., 812; (V. KNAPP and SCHULTZ), 1882, A., 510.
- Quinones**, action of organo-zinc compounds on (JAPP), 1879, T., 526; 1880, T., 408.  
behaviour of, when heated with soda-lime (GRAEBE), 1873, 635.
- Quinoneanilide** (WICHELHAUS), 1873, 172.
- Quinonechlorimide** (SCHMITT), 1879, A., 924; (HIRSCH), 1881, A., 163.  
*trichloro-*, conversion of *p*-amidophenol into (SCHMITT and ANDRESEN), 1882, A., 611.
- Quinonedichlorodiimide** (HIRSCH), 1881, A., 164.
- Quinonedianilide**, 3:6-*dichloro-* (SCHMITT and ANDRESEN), 1882, A., 400.
- Quinonedio-ethoxyanilide**, *dichloro-* (SCHMITT and ANDRESEN), 1882, A., 400.
- Quinonedihydrodicarboxylic acid**. See 3:6-Dihydroxyterephthalic acid.
- Quinonedimethylamidophenylimide**, *trichloro-* (SCHMITT and ANDRESEN), 1882, A., 400.
- Quinonehydrodicarboxylic acid**. See 3:6-Dihydroxyterephthalic acid.
- Quinoneimide**, *chloro-* (*dichloroazophenol*), constitution of (SCHMITT and BENNEWITZ), 1874, 260; (HIRSCH), 1879, A., 315; (SCHMITT), 1879, A., 924.
- Quinoneoxime** (*p-nitrosophenol*) (V. BAEYER and CARO), 1875, 84; (JAEGER), 1875, 1260.  
action of aromatic bases on (KIMICH), 1876, i., 263.
- Quinonetetrahydrodicarboxylic acid**. See Succinylpropionic acid.
- Quinonetetrahydrodicarboxylic acid**. See Succinylsuccinic acid.
- Quinonic acid**, *dichloro-*. See Chloranilic acid.
- $\alpha$ -Quinophenol**. See 1-Hydroxyquinoline.
- $\beta$ -Quinophenol**. See 3-Hydroxyquinoline.
- R.**
- Racemic acid** (*paratartric acid*) (STAEDEL), 1879, A., 223; (TANATAR), 1880, A., 875; (KEKULÉ and ANSCHÜTZ), 1881, A., 714.  
conversion of *d*-tartaric acid into (JUNGFLEISCH), 1873, 166.  
production of, in the manufacture of *d*-tartaric acid (JUNGFLEISCH), 1878, A., 138.
- Racemic acid** (*paratartric acid*), and *i*-tartaric acid, reciprocal transformation of (JUNGFLEISCH), 1873, 270.  
heat of solution of (BERTHELOT and JUNGFLEISCH), 1874, 763.  
search for, in tartaric liquors (WARINGTON), 1875, 988.  
decomposition of (JUNGFLEISCH), 1882, A., 602.  
preparation of the ethereal salts of (ANSCHÜTZ and PICTET; ANSCHÜTZ), 1880, A., 876.
- Radiant heat**. See under Thermochemistry.
- Radiant matter** from electrodes (PULUJ), 1882, A., 3.
- Radiation**. See under Photochemistry.
- Radiometer**, experiments with Crookes' (BÖTTGER), 1876, ii., 266.
- Radishes**, formation of starch in the cotyledons of (BÖHM), 1876, i., 952.
- Raffinose** (*melitose*; *melitriose*), a new crystalline organic substance (LOISEAU), 1876, ii., 397.
- Rags**, conversion of, into manure (RISS-MÜLLER and WIESINGER), 1879, A., 859.
- Rails**, manufacture of, from iron containing phosphorus (ANON.), 1877, ii., 240; (BELL), 1879, A., 185.  
steel, composition of (TROILIUS), 1882, A., 336.
- Raimondite**, optical properties of (DES CLOIZEAUX), 1882, A., 281.
- Rainfall**, daily (AUGUSTIN), 1882, A., 1227.  
in Germany, the highest daily (ZIEGLER), 1882, A., 87.  
influence of forests on (FAUTRAT; MATTHIEU), 1880, A., 737.
- Rain-water**. See Water.
- Raisins**, sugar in (HAAS), 1880, A., 932.  
wine from (REBOUL), 1881, A., 198.
- Ralstonite**, composition of (BRANDL), 1882, A., 1176.
- Rangiformic acid** (PATERNO), 1882, A., 1083.
- Rape**, perishing of, in winter (BREY-MANN; BRITNIK-UHA), 1882, A., 548.  
respiration in the ripening fruits of (SABANIN and LIASKOWSKI), 1878, A., 333.
- Rape oil**, bleaching of (PUSCHER), 1873, 100.
- Rare earths**. See Earths.
- Raspberries**, wild and cultivated (REICHARDT), 1880, A., 936.
- Ratanhine** (KREITMAIR), 1875, 1038.
- Raute** (PAJKULL), 1875, 239.

**Rays.** See under Photochemistry.

**Razoumoffskin** (*razumovskyn*) (HELM-HACKER), 1881, A., 541.

occurrence of, near Freistadt in Upper Austria (SCHARIZER), 1882, A., 580.

**Reactions,** speed of (PAWLEWSKI), 1880, A., 438.

without the intervention of a solvent (LORIN), 1879, A., 689; 1881, A., 873.

**Realgar,** occurrence of, in Utah (BLAKE), 1882, A., 148.

See also Arsenic sulphide.

**Recrystallisation and regelation** (PFAUNDLER), 1877, i., 433.

**Red antimony.** See Kermesite.

**Red clover.** See Clover under Agricultural Chemistry.

**Red lead.** See Triplumbic tetroxide under Lead, and Minium.

**Red silver ore.** See Pyrargyrite and Pronstite.

**Reddingite** (BRUSH and DANA), 1879, A., 892.

**Reduction and oxidation,** thermochemistry of (THOMSEN), 1873, 1186; 1874, 530; 1875, 223.

**Reduction-processes** in the animal body (v. MERING), 1882, A., 952.

**Refraction.** See under Photochemistry.

**Refractory materials,** composition of (SNEELUS), 1878, A., 921.

**Refuse of Paris,** products of fermentation in the (MAUMENÉ), 1877, ii., 915.

**Regelation and recrystallisation** (PFAUNDLER), 1877, i., 433.

“**Reh.**” an inflorescence on the soil of certain districts of India, composition of (GIBSON), 1882, A., 650.

**Reichardtite.** See Epsomite.

**Rennet and rennet-ferment.** See under Enzymes.

**Reptiles,** chemical constituents of the eggs of (HILGER), 1873, 924.

**Repulsion, chemical.** See Affinity.

**Resacetatein** (NENCKI and SIEBER), 1881, A., 811.

*triacetate* (RASIŃSKI), 1882, A., 1288.

**Resacetophenone** (2:4-dihydroxyacetophenone) and its amido-compound (NENCKI and SIEBER), 1881, A., 591, 811.

**Resaurin** (NENCKI and SIEBER), 1881, A., 812; (NENCKI), 1882, A., 1201.

**Resazurin** (*resazoin*; *diazoresorcinol*; *azoresorcinol*) and its ethyl ether (WESELSKY and BENEDIKT), 1881, A., 726.

*mono- and di-nitro-*, and the action of potash on (BENEDIKT and v. HÜBL), 1881, A., 1134.

**Research fund.** See under Balance sheet.

**Residues,** utilisation of (LADUREAU), 1882, A., 248.

obtained in the manufacture of aniline-red, utilisation of (ANON.), 1879, A., 995.

from gas manufacture, utilisation of (SESTINI and FUNARO), 1882, A., 1181.

obtained in removing the fat from wool by Chaudet's process, utilisation of (ANON.), 1873, 1273.

*Resina guaiaci Peruviana aromatica v. odorata* (KOPP), 1877, i., 716.

**Resin oil,** constituents of (TILDEN), 1881, A., 101; (RENARD), 1882, A., 64.

benzene in (SMITH), 1876, ii., 29.

caproic acid in (KELBE and WARTH), 1882, A., 711.

hydrocarbon from (KELBE), 1879, A., 467.

uses of (ANON.), 1873, 304, 1175.

analysis of (RÉMONT), 1880, A., 683; 1881, A., 202.

**Resin-sizing** of paper (WURSTER), 1878, A., 184, 626; (LUNGE), 1879, A., 994.

**Resin spirit,** some constituents of (MORRIS), 1882, T., 167.

**RESINS,** chemistry of (HIRSCHSOHN), 1878, A., 158.

formation of (DRAGENDORFF), 1880, A., 125.

specific gravities of (HAGER), 1880, A., 70.

products of the dry distillation of (MORRIS), 1882, T., 167.

and resin-acids, distillation of some, with zinc-dust (CIAMICIAN), 1878, A., 438; 1879, A., 69; 1880, A., 39, 126.

decomposition of, by distillation over zinc-dust (BÖRSCH), 1882, A., 209.

**Aloes resin** (CRAIG), 1875, 1272.

**Asafetida** (FLÜCKIGER), 1876, i., 431.

**Benzoin,** action of carbon disulphide on (GUICHARD), 1875, 762; 1876, i., 616.

Palembang (SAALFELD), 1881, A., 101.

Siam, vanillin in (JANNASCH and RUMP), 1879, A., 245.

Sumatra, new constituent of (THEEGARTEN), 1874, 1098.

**Colophony** (WURSTER), 1878, A., 185; (RÉMONT), 1880, A., 684; 1881, A., 202.

## RESINS—

**Colophony**, distillation of (BRUY-LANTS), 1876, i., 615; (RENARD), 1880, A., 893; 1881, A., 738; 1882, A., 737, 1179, 1301.

and turpentine oil, oxidation products of (SCHREDER), 1873, 889; 1874, 794.

**Conima resin** (STENHOUSE and GROVES), 1876, i., 175.

**Copal**, composition of, and its alteration by fusion (SCHWARZ), 1878, A., 627.

**Dammara resin**, Australian (MUIR), 1874, 733; (RENNIE), 1881, T., 240.

**"Dekamali" resin** (FLÜCKIGER), 1877, ii., 501.

gardenin and a terpene from (STENHOUSE and GROVES), 1879, T., 688.

**Dragon's blood resin**, decomposition of, by distillation over zinc dust (BÖTSCH), 1882, A., 209.

**Elemi resin**, reduction-products of (CIAMICIAN), 1879, A., 69.

of *Eucalyptus* (v. HARTSEN), 1876, i., 615, 942.

**Fossil resin**, sulphur in (HELM), 1879, A., 301, 896.

new, investigation of (HELBING), 1875, 46.

from the Fichtelgebirge (SCHMIDT), 1876, i., 350.

from Köllach, in Styria (DOELTER), 1881, A., 359.

from East Prussia (PIESZCZEK), 1881, A., 687.

from the coal-beds of Upper Silesia (v. LASAULX), 1882, A., 285.

and lignite coal, gases enclosed in, from Bovey Heathfield, Devonshire (THOMAS), 1877, ii., 146.

**Amber**, yellow (REBOUX), 1877, ii., 903.

chemical and physical properties of (HELM), 1878, A., 323; 1879, A., 300, 896.

microscopical properties of (HELM), 1879, A., 300.

identity of so-called "unripe," with *krantzite* (SPIRGATIS), 1873, 483.

amount of sulphur in (HELM), 1879, A., 300.

**Asphalt**. See Asphalt.

**Gedanite** (HELM), 1879, A., 300, 896.

**Siegburgite** (v. LASAULX), 1875, 615.

**Wheelerite** (LOEW), 1874, 1073.

## RESINS—

**Galbanum** (HIRSCHSOHN), 1878, A., 158.

**Gamboge**, composition of (COSTELO), 1879, A., 1042.

from ginger (THRESH), 1882, A., 626.

**Guaiacum resin**, decomposition of, by distillation over zinc-dust (BÖTSCH), 1882, A., 210.

as a test for copper (PURGOTTI), 1878, A., 754.

value of a tincture of, as a test for ozone (BINZ), 1873, 938.

tincture of, as a test for the purity of "Kirschenwasser" (BOUSSINGAULT), 1875, 292.

**Gum resin** from Arizona and California (STILLMANN), 1881, A., 52.

action of carbon disulphide on (GUICHARD), 1875, 763; 1876, i., 616.

from *Thapsia* (YVON), 1877, ii., 914; (BLANCHET), 1880, A., 718;

(SOUBEIRAN), 1881, A., 181.

ammonia (HIRSCHSOHN), 1878, A., 158.

from Morocco, products of the decomposition of, by fusion with potash (GOLDSCHMIEDT), 1878, A., 738.

products of distillation of, with zinc-dust (CIAMICIAN), 1880, A., 39, 126.

**Gurjun resin** (FLÜCKIGER), 1878, A., 439.

of hops (ISSLEIB), 1881, A., 101.

from *Hydrangea arborescens* (BAUR), 1881, A., 916.

in jalap (STEVENSON), 1880, A., 717.

of the larch agaric (*Boletus Laricis*) (MASING), 1876, i., 612.

of leptandra (LLOYD), 1881, A., 103.

**Opoponax** (HIRSCHSOHN), 1878, A., 158.

**Podophyllum resins** (BUSCH), 1878, A., 325; (PODWYSOZKI), 1882, A., 977.

colour of (SENIER and LOWE), 1878, A., 326.

from *Quebracho Colorado* (ARATA), 1878, A., 986.

from rosewood (TERREIL and WOLFF), 1880, A., 559.

**Sagapenums** (HIRSCHSOHN), 1878, A., 158.

of scammony, new method for the extraction of (PERRET), 1877, ii., 950.

**Shellac** (HERTZ), 1877, i., 479.

alcoholic solution of (PELTZ), 1876, ii., 678.



## RESINS—

**Storax**, constituents of (LAUBENHEIMER), 1873, 65; (HAGER), 1874, 1017; (V. MILLER), 1876, i., 612, 939; 1878, A., 159; (VAN'T HOFF), 1876, i., 703; 1877, i., 214, 478.

**Urn resin** (HOSTMANN; FLÜCKIGER), 1876, i., 614.

from *Veratrum viride*, saponification of (BULLOCK), 1880, A., 171.

of *Veratrum viride* and *V. album* (MITCHELL), 1875, 1267.

of the white agaric (*Polyporus officinalis*) (FLEURY), 1876, i., 431.

**Resins, estimation and separation**—  
in commercial oils, analysis of (RÉMONT), 1880, A., 684; 1881, A., 202.

separation of, from fats (GLADDING), 1882, A., 663.

separation of, from fatty acids (BARFOED), 1876, i., 771.

See also Balsams and Turpentine.

**Resistance.** See Electrical resistance under Electrochemistry.

**Resocyanin** (SCHMID), 1882, A., 509; (WITTENBERG), 1882, A., 1289.

**Resoquinone**, tribromo-, reduction of (BENEDEKT), 1879, A., 55.

**Resorcinol** (*resorcin*; 1:3-dihydroxybenzene) (CALDERON), 1877, ii., 474, 613, 889; (GOLDSCHMIDT), 1878, A., 738; (BANTLIN), 1879, A., 238; (BARTH and SCHREDER), 1879, A., 927.

from Brazil-wood extract (KOPF), 1873, 899.

from *m*-dinitrobenzene (WURSTER and NÖLTING), 1874, 1163.

preparation of (DURAND), 1878, A., 455.

manufacture of (BINDSCHEDLER and BUSCH), 1879, A., 291.

manufacture of, and colouring-matters derived from it (BINDSCHEDLER), 1880, A., 426.

constitution of (HESSE), 1873, 387; (KÖRNER), 1876, i., 235; (FISCHLI), 1878, A., 866.

vapour-density of (TROOST), 1879, A., 1025.

action of glacial acetic acid on (NENCKI and SIEBER), 1881, A., 591, 811.

products obtained by the action of aqua regia on (REYMANX), 1880, A., 645.

action of, on carbamide (BIENBAUM and LURIE), 1881, A., 95.

action of ethylic chloroformate on (BENDER), 1881, A., 48.

**Resorcinol** (*resorcin*; 1:3-dihydroxybenzene), action of hydrochloric acid on (BARTH and WEIDEL), 1878, A., 61; (BARTH), 1879, A., 157, 644.

action of nitrobenzene on (BRUNNER), 1882, A., 785.

action of oxalic acid on (GUKASSIANZ), 1878, A., 979.

action of oxalic acid on, at high temperatures (CLAUS and ANDREAE), 1877, ii., 889.

action of potassium iodate on (CLAASSEN), 1878, A., 868.

action of fuming sulphuric acid on (ANNAHEIM), 1877, ii., 613.

action of sulphuryl chloride on (REINHARD), 1878, A., 222, 726.

oxidation of, to phloroglucinol (BARTH and SCHREDER), 1879, A., 633.

derivatives of (DIEHL and MERZ), 1878, A., 875; (TIEMANN and PARRISIUS), 1881, A., 270.

diethyl ether of. See 1:3-Dithioxybenzene.

dimethyl ether of. See 1:3-Dimethoxybenzene.

ethyl ether of. See Hydroxyethoxybenzene.

methyl ether of. See Hydroxymethoxybenzene.

**Resorcinol**, amidodimido- (DIEHL and MERZ), 1878, A., 875.

$\beta$ -dibromo- (ZEHENTER), 1882, A., 193.

tribromo- (TYPKE), 1878, A., 219; (CLAASSEN), 1878, A., 867; (BENEDEKT), 1879, A., 55, 464.

tetrabromo- (CLAASSEN), 1878, A., 867.

pentabromo- (LIEBERMANN and DITTLER), 1873, 502; 1874, 62; (CLAASSEN), 1878, A., 867; (BENEDEKT), 1879, A., 464, 717; 1880, A., 246.

action of aniline, and of tin and hydrochloric acid on (BENEDEKT), 1879, A., 55.

4:6:2-dibromonitro- (WESELSKY and BENEDEKT), 1881, A., 727.

mono- and di-chloro- (REINHARD), 1878, A., 726.

dichloro-, action of sulphuryl chloride on (REINHARD), 1878, A., 726.

tri-, tetra-, and penta-chloro- (REINHARD), 1878, A., 727; (CLAASSEN), 1878, A., 868.

$\alpha$ -chlorodibromo-, and dichlorobromo- (REINHARD), 1878, A., 726.

iodo- (STENHOUSE), 1873, 275; 1874, 585.

triiodo- (MICHAEL and NORTON), 1877, i., 463; (CLAASSEN), 1878, A., 868.

- Resorcinol**, nitro-, probable formation of, from nitro-*m*-phenylenediamine (BARBAGLIA), 1875, 273.
- 2- and 4-nitro- (WESELSKY and BENEDIKT), 1881, A., 727.
- 2:4-dinitro- (BENEDIKT and v. HÜBL), 1881, A., 1132.
- 2:4:6-trinitro- (*styphnic acid*) (BANTLIN), 1879, A., 238; (GUIGNET), 1879, A., 603; (MERZ and ZETTER), 1880, A., 113; (BENEDIKT and v. HÜBL), 1881, A., 1132.
- preparation of (MERZ and ZETTER), 1879, A., 717.
- conversion of *m*-nitrophenol into (BANTLIN), 1877, ii., 475.
- 4:2-nitramido-, and its sulphate, and 4:6:2-dinitramido- (*styphnamic acid*) (BENEDIKT and v. HÜBL), 1881, A., 1133.
- dithio- (KÖRNER and MONSELISE), 1877, i., 81.
- Resorcinolaurin**, anhydrides of (GUKASIANZ), 1878, A., 979.
- Resorcinolbenzein**, and *tetrabromo-* (DOEBNER), 1880, A., 644.
- Resorcinol-black** (v. WAGNER), 1876, ii., 233.
- Resorcinol-blue** (BINDSCHIEDLER and BUSCH), 1879, A., 292.
- Resorcinolcitrein** (FRAUDE), 1882, A., 399.
- Resorcinol colouring matters** (v. WAGNER), 1876, ii., 82; (DURAND), 1878, A., 455; (BINDSCHIEDLER), 1880, A., 426; (WESELSKY and BENEDIKT), 1881, A., 726; (DAMM and SCHREINER), 1882, A., 968.
- Resorcinol- $\alpha$ - and - $\beta$ -dicarboxylic acids** and their salts (SENHOFER and BRUNNER), 1881, A., 265.
- Resorcinoldisulphonic acid** and its salts (PICCARD and HUMBERT), 1877, i., 312; (TEDESCHI), 1879, A., 934; (FISCHER), 1881, A., 1147.
- Resorcinoloxalein**, and its derivatives, and *pentabromo-* (CLAUS), 1882, A., 399.
- Resorcinolphthalein**, 3:5-di*bromo-* (v. BAAYER), 1877, i., 204.
- Resorcinolquinone** (NIETZKI), 1880, A., 247.
- Resorcinolsuccinein** (MEYER), 1880, A., 248.
- Resorcinolisosuccinein** (ROSICKI), 1880, A., 358.
- Resorcinolsulphonic acid** and its salts (FISCHER), 1881, A., 1148.
- iodo-, alkali salts of (FISCHER), 1881, A., 1149.
- Resorcinoltartrein** (FRAUDE), 1882, A., 399.
- Resorcinoltrisulphonic acid** (PICCARD and HUMBERT), 1877, ii., 340.
- Resorecyl oxide** (BARTH), 1876, i., 921.
- Resorecylaldehyde** and its derivatives (TIEMANN and LEWY), 1878, A., 423.
- Resorecylaldehyde** and its derivatives (TIEMANN and LEWY), 1878, A., 423.
- Resorecyclic acids**,  $\alpha$ - and  $\beta$ -. See Dihydroxybenzoic acids.
- Respiration**, theory of (PFLÜGER), 1875, 1040.
- in the lungs (NUSSBAUM), 1873, 929.
- under reduced pressure (SETSCHENOFF), 1880, A., 903.
- function of, at various altitudes on the Island and Peak of Teneriffe (MARCE), 1880, A., 483.
- and perspiration, comparative examination of the amount of carbon dioxide excreted by, in animals in different intervals of time (POTT), 1876, i., 721.
- influence of, on the metamorphosis of tissue (PFLÜGER; FINKLER and OERTMANN), 1877, i., 482.
- of animals, influence of carbon dioxide on the (RAOULT), 1876, ii., 318.
- of cold-blooded animals, influence of temperature on the (SCHULZ; PFLÜGER), 1877, i., 327.
- of fishes (QUINQUAUD), 1873, 929.
- of frogs (MÜLLER-ERZBACH), 1873, 1154.
- See also under Agricultural Chemistry.
- Respiratory combustion** (ESTOR and SAINTPIERRE), 1873, 398.
- Respiratory movements**, influence of, on the formation of carbon dioxide (v. VOIT), 1879, A., 75, 951.
- Retene** (*retistene*; *methylpropylphenanthrene*) and its derivatives (EKSTRAND), 1876, i., 86; ii., 514; 1877, ii., 497.
- di- and *tetra-bromo-* (EKSTRAND), 1877, ii., 497.
- Retene-di- and -tri-sulphonic acids** (EKSTRAND), 1877, ii., 497; 1878, A., 154.
- Retenepicric acid** (EKSTRAND), 1877, ii., 497.
- Retenequinone** (*dioxyretistene*) (EKSTRAND), 1876, i., 86; ii., 514; 1877, ii., 498.
- Retinalites** (HELM), 1879, A., 301.
- Retinellite** (*retinile*), Russian (PISANI), 1879, A., 441.
- and fichtelite in the peat-moors of the Fichtelgebirge (SCHMIDT), 1876, i., 350.

- Retinindole** (v. BAAYER), 1879, A., 535, 938.
- Retorts**, blue colour of, employed in the distillation of zinc (DEGENHARDT), 1876, ii., 47.
- Retrogradation** produced by the electric discharge during the conversion of oxygen into ozone (HAUTEFEUILLE and CHAPPUIS), 1882, A., 688.
- Reussinite** (DOELTER), 1881, A., 359.
- Rezbanyite** (*cosalite*) (FRENZEL), 1874, 1142.
- Rhabdite** (MALLARD), 1881, A., 690.
- Rhabdophane** (*scovillite*), a new mineral (LETTSON), 1878, A., 652; (HARTLEY), 1882, T., 210.
- Rhagite** (WEISBACH), 1874, 667; (WINKLER), 1875, 240.
- Rhamnetin**, formula of, and *dibromo-* (LIEBERMANN and HOERMANN), 1879, A., 271.  
fusion of, with potash (SMORAWSKY), 1880, A., 53.
- Rhamnodulcite** (*rhamnose*). See *isodulcitol* under Carbohydrates.
- Rhamnus Frangula**, emodin from the bark of (LIEBERMANN and WALDSTEIN), 1877, i., 477.  
frangulin from (FAUST), 1873, 503.
- Rheocord** (MÜLLER), 1874, 220, 766.
- Rheum officinale** grown in England, composition of (SENIER), 1878, A., 240.
- Rhexite** (NIEDERSTADT), 1880, A., 595.
- Rhodammonium compounds**. See under Rhodium.
- Rhodeine**, from an analytical point of view (JACQUEMIN), 1876, ii., 665; 1877, i., 109.
- Rhodium** (WILM), 1881, A., 514.  
action of, on coal-gas (WILM), 1881, A., 706.  
action of, on ethylic alcohol and formic acid (SAINT-CLAIRE DEVILLE and DEBRAY), 1874, 1076.  
oxidation of (WILM), 1882, A., 1033.
- Rhodium alloys** with lead and with zinc, action of acids on (DEBRAY), 1880, A., 706.
- Rhodium ammonium chloride** (WILM), 1881, A., 514.  
sodium chloride, crystalline form of (v. LASAULX), 1875, 613.
- Rhodammonium compounds** (JÖRGENSEN), 1882, A., 1173.
- Rhodium mercaptide** (CLAËSSON), 1877, ii., 295.
- Rhodochromium salts**. See Chromammonium salts under Chromium.
- Rhodochrosite** (*manganspath*) (BRUSH and DANA), 1881, A., 531.  
See also Manganese carbonate.
- Rhœadine** (HESSE), 1878, A., 157.
- Rhubarb**, comparative composition of (DRAGENDORFF), 1878, A., 624.  
Java (HUSEMANN), 1877, ii., 914.  
St. Petersburg (PRZEWALSKI; BEILSTEIN), 1882, A., 1126.
- Rice**. See under Agricultural Chemistry.
- Rice-starch** manufacture, present state of (ADLUNG), 1876, ii., 675; 1877, i., 363.  
paste from (ANON.), 1873, 1072.
- Ricinine** from *Ricinus communis* (WAYNE), 1874, 706.
- Ricinoleic acid**, conversion of, into stearic acid (CLAUS), 1877, ii., 314.  
sodium salt of, distillation of (NEISON), 1874, 507, 837.
- Ricinus communis** (*castor oil plant*), composition of the leaves of (WAYNE), 1874, 706.  
albuminoids from the seeds of (RITTHAUSEN), 1879, A., 390; 1882, A., 876.
- Ring-burner**, use of, in analysis (SADTLER), 1874, 1098.
- Rittingerite** (SCHRAUF), 1873, 852.  
from Chañarcillo (SCHRAUF), 1880, A., 856.
- River waters and rivers**. See Water.
- Rivers**, currents at the mouths of (EKMAN), 1876, ii., 495.
- Roads**, injurious effects produced by covering, with pyrites-residues (SARAZIN), 1877, ii., 236.
- Rochelle salt**. See Tartaric acid, potassium sodium salt of.
- Rock-crystal** from Kasbek (FRENZEL), 1880, A., 615.  
construction of scientific instruments of (STEIN), 1877, i., 682.  
weights and measures (BUFF), 1878, A., 769.  
See also Quartz.
- Rock salt** from Saltville (SLOAN), 1880, A., 95.  
from Westeregeln, pseudomorphs of (WEISS), 1874, 881.  
etched figures on cubes of (SOHNCKE), 1876, ii., 273.  
pseudomorph of, after carnallite or sylvite (GEINITZ), 1877, i., 699.  
See also Sodium chloride.
- Rocks**, microscopic structure of (FRIEDRICH), 1874, 1075.  
heat conductivity of (JANNETTAZ), 1874, 1045; 1876, ii., 39; (LESS), 1878, A., 693; (THOULET), 1882, A., 790.  
action of sulphurous acid on (SCHMIDT), 1882, A., 583.

**Rocks**, decomposition of, by gypsum (COSSA), 1873, 1202.  
 characters of the crust produced on, by atmospheric agency compared with the black coating of certain meteorites (MEUNIER), 1873, 141.  
 presence of manganese on the surface of (BOUSSINGAULT), 1882, A., 1270.  
 distribution of zircon in (TÖRNEBOHM), 1877, ii., 577.  
 Canadian (HARRINGTON), 1881, A., 542.  
 Italian, composition of (COSSA), 1876, i., 752.  
 of Kerguelen's Land and the neighbouring islands (v. GÜMBEL), 1881, A., 391.  
 in the neighbourhood of the Loire analogous to the granitic porphyries (MICHEL-LÉVY), 1874, 1075.  
 of Monte Somma (ROTH), 1882, A., 482.  
 of Monte Tajumbina in Peru (HÖPFNER), 1881, A., 1015.  
 in the basalt of the Persányer Gebirge (Koch), 1881, A., 703.  
 occurring between Puerto de Tablas on the Orinoco and the gold district of Caratal, description of (ATTWOOD; BONNEV), 1881, A., 390.  
 from the highland of Quito (VOM RATH), 1874, 881.  
 of the Rummelsberg, near Strehlen (SCHUMACHER), 1881, A., 698.  
 of the St. Gothard Tunnel (MEYER), 1879, A., 366.  
 of the Santorin Archipelago (FORQUÉ), 1881, A., 555.  
 of South Greenland (VREA), 1874, 967; 1875, 625.  
 and minerals of the Island of Vulcano (COSSA), 1878, A., 952.  
 acid, microscopic character of the old, with regard to the age of their volcanic formation (MICHEL-LÉVY), 1876, i., 197.  
 bituminous, commercial valuation of (KIENLEN), 1880, A., 682.  
 calcareous, of the province of Salerno (RICCIARDI), 1882, A., 811.  
 crystalline, origin of (MICHEL-LÉVY), 1877, i., 57.  
 in the neighbourhood of Messina (RICCIARDI), 1882, A., 1177.  
 of Minnesota (STRENG and KLOOS), 1877, ii., 580, 720.  
 of Nassau (v. SANDBERGER), 1874, 881.  
 composition of (v. GERICHTEN), 1874, 708.

**Rocks**, ferruginous, of Ovivak and Assuk in Greenland (TÖRNEBOHM), 1881, A., 28.  
 lias, of Franconia and Schwabia (v. RAUMER), 1878, A., 956.  
 primary, of the Northern Schwarzwald (HEBENSTREER), 1878, A., 208.  
 existence of zinc in all (DIEULAFIT), 1880, A., 708.  
 primitive, presence of titanium and vanadium in all (DIEULAFIT), 1882, A., 371.  
 schistose, conduction of heat in (JANNETTAZ), 1876, i., 516.  
 Silurian, in the territorio d'Iglesias, Sardinia (COSSA and MATTIROLI), 1882, A., 583.  
 vitreous, devitrification of (MEUNIER), 1877, i., 57, 448, 488.  
 volcanic, minerals inclosed in (v. SANDBERGER), 1873, 739.  
 spherulites in (MICHEL-LÉVY), 1882, A., 705.  
 of the Banat (NIEDZWIEDZKI), 1874, 881.  
 a group of dissimilar, in Campton, New Hampshire (HAWES), 1881, A., 701.  
 of Easter Island (Rapa-Nui) (VÉLAIN), 1882, A., 481.  
 palæolithic, of the Fichtel range (v. GÜMBEL), 1874, 1075.  
 of the Philippine and Palau Islands (OEBBEKE), 1882, A., 1034.  
 in the Saar and Moselle districts (v. LASAULX), 1880, A., 537.  
 of Sardinia (DOELTER), 1881, A., 700.  
 of Styria (v. DRASCHE), 1874, 240.  
 in the Vicentine territory (v. LASAULX), 1874, 673.  
**Rogersite** (SMITH), 1877, ii., 576.  
**Roots**. See under Agricultural Chemistry.  
**Rosa**, a new aniline colour (BRONNER), 1873, 207.  
*Rosa gallica*, colouring matter of the petals of (SENIER), 1877, ii., 502.  
**Rosaniline** (*tri- $\alpha$ -methylphenyltolylcarb- $\alpha$ -nol*) (E. and O. FISCHER), 1876, ii., 529; 1878, A., 573, 791; 1879, A., 384; 1881, A., 162; (CARO and GRAEBE), 1878, A., 794.  
 preparation of (WURTZ), 1877, i., 322.  
 influence of *m*-toluidine in the preparation of (MONNET, REVERDIN and NÖLTING), 1879, A., 625.  
 transformation of aurin into (DALE and SCHORLEMMER), 1877, ii., 121.



- Rosaniline** (*triamidodiphenyltolylearbinol*), manufacture of (BRÜNING), 1873, 658; (COUPIER), 1873, 959.  
 occurrence of *paraleucaniline* in the manufacture of (GRAEBE), 1880, A., 162.  
 constitution of (GRAEBE and CARO), 1874, 275.  
 absorption of, by siliceous substances generally (SKEY), 1874, 1028.  
 action of ammonia on (JACQUEMIN), 1876, ii., 100.  
 decomposition of, by water (LIEBERMANN), 1873, 1241.  
 colouring matters (E. and O. FISCHER), 1876, ii., 529; 1878, A., 573, 791; 1879, A., 236, 384, 787; 1880, A., 390; 1881, A., 162.  
 See also Magenta under Colouring matters.  
 violet-derivatives of (v. HOFMANN), 1873, 913.  
 salts, constitution of (ROSENSTIEHL), 1880, A., 553.  
 sulphite, reaction of organic compounds with (SCHMIDT), 1882, A., 179.  
 detection of, in wine (WARTHA), 1880, A., 680; (KÖNIG), 1881, A., 314.  
**Pararosaniline** (*triamidotriphenylcarbinol*) (E. and O. FISCHER), 1879, A., 385.  
 constitution of (ROSENSTIEHL), 1880, A., 553.  
**Rosanilines**, existence of three isomeric (ROSENSTIEHL), 1876, i., 935; 1881, A., 263.  
 conditions of formation of (ROSENSTIEHL and GERBER), 1882, A., 964, 1284.  
 constitution of (ROSENSTIEHL), 1879, A., 463.  
**Rosaurin** (DALE and SCHORLEMMER), 1879, T., 159.  
**Roscoelite** (GENTH), 1877, i., 175; (ROSCOE), 1877, i., 444.  
**Rose**, garden, ash of the (ANDREASCH), 1879, A., 338.  
**Rose quartz** (VOM RATH), 1881, A., 550.  
**Roselite** (WEISBACH), 1874, 553; (WINKLER), 1875, 240; 1878, A., 17; (SCHRAUF), 1875, 547.  
**Rosemary oil** and its reactions (BRUYLANTS), 1879, A., 725.  
 preparation of (ČECH), 1879, A., 97.  
**Roseo-**. See under word to which *roseo* is prefixed.
- Rosewood**, resin from (TERREIL and WOLFF), 1880, A., 559.  
**Rosin**. See Resin.  
**Rosin oil**. See Resin oil.  
**Rosolic acid** (*aurin*) (DALE and SCHORLEMMER), 1873, 434; 1878, A., 671; 1879, T., 148; A., 58, 925; (E. and O. FISCHER), 1878, A., 576; 1879, A., 386; (ZULKOWSKI), 1878, A., 505; 1879, A., 58; 1881, A., 900; (CARO and GRAEBE), 1878, A., 794; 1879, A., 59; (DE CLERMONT and FROMMEL), 1879, A., 789.  
 formation of (GUKASSIANZ), 1878, A., 979.  
 constituents of (ZULKOWSKI), 1878, A., 505; 1879, A., 58.  
 crystalline form of (DALE and SCHORLEMMER), 1873, 436.  
 action of acetic anhydride on (CARO and GRAEBE), 1878, A., 795.  
 action of acetic chloride and acetic anhydride on (DALE and SCHORLEMMER), 1879, T., 153.  
 action of ammonia on (DALE and SCHORLEMMER), 1879, A., 925; (ZULKOWSKI), 1881, A., 725.  
 action of methylamine on (DALE and SCHORLEMMER), 1879, A., 926.  
 bromination of (ZULKOWSKI), 1882, A., 1290.  
 oxidised (ZULKOWSKI), 1881, A., 725, 900.  
 nature of the so-called (ZULKOWSKI), 1882, A., 1292.  
 transformation of, into rosaniline (DALE and SCHORLEMMER), 1877, ii., 121.  
 transformation of, into trimethyl-*pararosaniline* (DALE and SCHORLEMMER), 1879, T., 562.  
 calcium salt of, accidental formation of (LEUCHS), 1873, 275.  
 combination of, with acids (DALE and SCHORLEMMER), 1879, T., 154.  
 compound of, with sulphur dioxide (DALE and SCHORLEMMER), 1873, 437.  
 salts (DALE and SCHORLEMMER), 1873, 438.  
 sulphate (ZULKOWSKI), 1882, A., 1292.  
 analysis of, by means of platinum (KOPFER), 1876, i., 662; 1877, i., 228.  
**Rosolic acid**, bromo-, hydrobromide of (ZULKOWSKI), 1882, A., 1290.  
*tetrabromo-* (DALE and SCHORLEMMER), 1879, T., 152.

- Rosolic acid** (*corallin*) (PRUD'HOMME), 1873, 902; (COMMAILLE), 1874, 474; (GRAEBE and CARO), 1876, i., 588; 1878, A., 794; 1879, A., 59; (LIEBERMANN and SCHWARZER), 1876, ii., 414; (ZULKOWSKI), 1878, A., 872; 1879, A., 59; (DALE and SCHORLEMMER), 1879, T., 148; A., 926.  
 formation of, from cresol and phenol (ZULKOWSKI), 1877, ii., 888.  
 constitution of (GRAEBE and CARO), 1874, 277.  
 constituents of (ZULKOWSKI), 1877, ii., 480; 1878, A., 872; 1881, A., 725, 899; 1882, A., 1290.  
 detection of, in presence of magenta (GUYOT and BIDAUX), 1877, i., 747.  
*tetrabromo-*, *tetrabromohydrocyano-* and *hydrocyano-* (GRAEBE and CARO), 1876, i., 590.
- ψ-Rosolic acid** (ZULKOWSKI), 1878, A., 872; 1879, A., 58.
- Rosolic acids**, colouring matter derived from (ERNHART), 1878, A., 315.
- Rosoquinone**, bromo- (V. BAEYER and SCHRAUBE), 1878, A., 869.
- Rosterite**, a new variety of beryl from Elba (GRATTAROLA), 1881, A., 1009.
- Rotation**, magnetic. See under Photochemistry.
- Rouge français** (V. MILLER), 1880, A., 664.
- Rouge de Tournai**, dyeing of cotton with (ANON.), 1873, 423.
- Roussin's salt** (PAWEL), 1880, A., 217, 218; (DEMEL), 1880, A., 218.
- Rubidine** (A. and G. DE NEGRI), 1880, A., 267.
- Rubidium**, atomic weight of (GODEFFROY), 1876, ii., 272.  
 and its salts, preparation of (SETTERBERG), 1882, A., 464.  
 preparation of, from beetroot ash (PFEIFFER), 1873, 474.  
 preparation of, from lepidolite (PETERSON), 1877, ii., 706.  
 as a substitute for potassium in the plant-cell (LOEW), 1878, A., 909.
- Rubidium compounds** (GODEFFROY), 1877, i., 685.
- Rubidium salts** and their reactions (GODEFFROY), 1875, 612.
- Rubidium fluoride**, specific gravity of (CLARKE), 1877, ii., 839.  
 silicotungstate (GODEFFROY), 1877, i., 175.  
 sulphate, action of calcium sulphate on (DITTE), 1877, i., 440.
- Rubijervine** (WRIGHT and LUFF), 1879, T., 407, 412, 420; (WRIGHT), 1879, T., 422.
- Rubus Chamæmorus**, colouring matter of (ČECH), 1881, A., 129.
- Ruby** and sapphire, occurrence of, with corundum in the Culsagee mine, Macon Co., N. Carolina (JENKS), 1875, 625.  
 artificial production of (FREMY and FEIL), 1878, A., 203.
- Rue**, colouring matter from (FÖRSTER), 1882, A., 976.  
 sugar from (FÖRSTER), 1882, A., 976.
- Rufigallic acid** (*hexahydroxyanthraquinone*) (SCHIFF), 1874, 271; (KLOBUKOWSKI and NÖLTING), 1876, i., 259; (WIDMAN), 1876, ii., 518; (KLOBUKOWSKI), 1877, i., 84; ii., 618.  
 decomposition of (SCHREDER), 1881, A., 282.
- Rum**, composition and examination of (BECKURTS), 1882, A., 102.
- Rumex Acetosa** and *R. Acetosella*, vegetation of, in a soil free from potash (MERCADANTE), 1876, i., 96.
- Rupert's drops**, and the annealing of glass (DE LUYNES), 1873, 723.
- Ruthenium** and its oxygen compounds (SAINTE-CLAIRE DEVILLE and DEBRAY), 1876, i., 48.  
 physical and chemical properties of (SAINTE-CLAIRE DEVILLE and DEBRAY), 1877, i., 443.  
 action of, on ethylic alcohol and formic acid (SAINTE-CLAIRE DEVILLE and DEBRAY), 1874, 1076.
- Ruthenium alloys** with zinc, action of acids on (DEBRAY), 1880, A., 707.
- Rutherfordite** (SHEPARD), 1881, A., 382.
- Rutile** from the Binnenthal, after specular iron (VOM RATH), 1877, ii., 856.  
 in gastaldite-eclogite from Val Tournanche (COSSA), 1881, A., 370.  
 from Medriach (HANSEL), 1878, A., 944.  
 occurrence of, in Norway (BRÜGGER and REUSCH), 1876, ii., 52.  
 See also Titanium dioxide.
- Rutylene**. See Decinene.
- Rye**. See under Agricultural Chemistry.

## S.

- Sabadilla seeds**. See *Veratrum Sabadilla*.
- Sabadilline** (WRIGHT and LUFF), 1878, T., 339.

- Sabadilline**, solubility of, in chloroform (NOWAK), 1873, 412, 535.  
 estimation of (MASING), 1877, ii., 367.
- Sabatrine** (WRIGHT and LUFF), 1878, T., 339.  
 estimation of (MASING), 1877, ii., 367.
- Saccharic acid**, action of phosphorus pentachloride on (BELL), 1879, A., 917.  
 action of phosphorus pentachloride and of hydriodic acid on (DE LA MOTTE), 1880, A., 36.  
 dry distillation of ammonium salts of (BELL and LAPPER), 1879, A., 524.  
 calcium salt of (BENEDIKT), 1873, 876.  
 tribasic calcium salt of (v. LIPP-MANN), 1880, A., 864.  
 potassium hydrogen salt of, preparation of (BAYLEY), 1881, A., 580.  
 strontium salt of (SCHEIBLER), 1882, A., 1015.
- Parasaccharic acid** (HABERMANN), 1880, A., 671.
- Saccharification** (BONDONNEAU), 1876, i., 365.
- Saccharimeter**, optical (PRAZMOWSKI), 1873, 829.  
 correction for (CASAMAJOR), 1882, A., 105.
- Saccharimetry** (MORIN), 1878, A., 167.  
 influence of certain salts and of lime in (MÜNTZ), 1876, ii., 552.
- Saccharin**. See under Carbohydrates.
- "Saccharin"** (*anhydro-o-sulphamine-benzoic acid*; *sulphobenzoic acid*, *imide of*; *benzoic sulphinide*) (FAHLBERG and REMSEN), 1879, A., 628.
- Saccharine matters**, test for (VIDAU), 1876, i., 111.
- Saccharinic acid**, and its salts and anhydride (SCHEIBLER), 1881, A., 149.
- Saccharite** (v. LASAULX), 1879, A., 360.
- Saccharomyces apiculatus** (HANSEN), 1882, A., 80.
- Saccharomyces cerevisiae** and free oxygen (MAYER), 1874, 913.
- Saccharomyces**. See also Fermentation and Yeast.
- Saccharose**. See Sucrose under Carbohydrates.
- Saccharovanillic acid** (TIEMANN and REIMER), 1875, 1199.
- Sacculmic acid** (SESTINI), 1880, A., 538, 865; 1882, A., 605.
- Sacculmic compounds** (SESTINI), 1882, A., 605.  
 action of halogens on (SESTINI), 1882, A., 1181.
- Sacculmin** (SESTINI), 1880, A., 538, 865.
- Sacculmous acid** (SESTINI), 1880, A., 865; 1882, A., 606.
- Safflorite** (*spathiopyrite*) from Bieber in Hesse (v. SANDBERGER), 1874, 552.
- Saffranine** (BÖTTGER), 1874, 722; (DALE and SCHORLEMMER), 1879, T., 682; (PERKIN), 1879, T., 728; (BINDSCHEDLER), 1880, A., 391.  
 constitution of (PHILLIPS), 1874, 81.
- Parasaffranine** and its salts (PERKIN), 1879, T., 729.
- Saffron**, adulteration of (MÜLLER), 1876, i., 824.  
 detection of (STODDART), 1878, A., 168.
- Safrole** (*shikimole*) (ARZRUNI), 1877, ii., 202.
- Safrosin**, manufacture of (BINDSCHEDLER and BUSCH), 1879, A., 292.
- Sagapenums** (HIESCHSONN), 1878, A., 158.
- Sage**, oil of (SUGUIRA and MUIR), 1878, T., 292; (MUIR), 1880, T., 678.  
 some optical properties of constituents of (MUIR), 1880, T., 688.  
 terpenes from (TILDEN and SHENSTONE), 1877, i., 557.
- Sage**, garden (*Saturcia hortensis*), occurrence of carvacrol in the ethereal oil of (JAHNS), 1882, A., 1065.
- Sago**, coloured (WITTSTEIN), 1878, A., 542.
- Sahlite**, ferruginous, from the Urals (DES CLOIZEAUX), 1875, 623.
- Sainfoin**, cultivation of (DEHÉRAIN), 1881, A., 456.
- Saké**, the alcoholic drink of the Japanese (KORSCHIEDT), 1879, A., 413; (KINCH), 1880, A., 134; (ATKINSON), 1881, A., 1059.
- Salicin**, electrolysis of (COPPOLA), 1878, A., 677.  
 action of heat on (SCHIFF), 1881, A., 439; (PARKER), 1882, A., 303.  
 solubility of (PARKER), 1882, A., 303.
- Salicylaldehyde** (*o-hydroxybenzaldehyde*) (HAARMANN), 1873, 907; (TIEMANN and REIMER), 1876, ii., 632; 1878, A., 226; (PHIPSON), 1877, ii., 481.  
 action of acetic anhydride on (BARBIER), 1880, A., 318, 468.  
 action of ammonia and of hydrocyanic acid on (HAARMANN), 1873, 908.  
 action of, on phenanthraquinone (JAPP and STREATFIELD), 1882, T., 146.

**Salicylaldehyde** (*o*-hydroxybenzaldehyde), derivatives of (HAARMANN), 1873, 907.

isomeric acids obtained from the ethers of (PERKIN), 1881, T., 409.

synthesis of coumarin from (TIEMANN and HERZFELD), 1877, i., 708.

nitro- (PHIPSON), 1877, ii., 617.

3- and 5-nitro- (MAZZARA), 1877, i., 597.

**Salicylaldehyde-green** (FISCHER), 1882, A., 393.

**Salicylamide**, action of hydrochloric acid on (SCHULERUP), 1881, A., 42.

3- and 5-nitro- (HÜBNER), 1879, A., 381.

**Salicylanilide** (WANSTRAT), 1873, 906; (KUPFERBERG), 1878, A., 320.

hydrocyanide, and 5-bromo- (HAARMANN), 1873, 907.

5-nitro- (MENSCHING), 1880, A., 556.

**Salicylglycollic acid.** See *o*-Hydroxymandelic acid.

**Salicylic acid** (*o*-hydroxybenzoic acid) (KOLBE), 1874, 373; 1875, 260; (SMITH), 1878, A., 71; (WILLIAMS), 1878, A., 576.

occurrence of, in the Violaceæ (MANDELIN), 1882, A., 548.

new formation of (HERRMANN), 1877, ii., 485.

preparation of snow-white, from the crude acid (RAUTERT), 1875, 1023.

conversion of *p*-hydroxybenzoic acid into (KUPFERBERG), 1876, i., 926.

conversion of phthalic acid into (LASSAR-COHN), 1881, A., 585.

synthesis of (SMITH), 1881, A., 1035.

remarkable properties of (KOLBE), 1875, 260.

aqueous solutions of (ALEXÉEFF), 1882, A., 1293.

solubility of (TOUSSAINT), 1876, i., 395; (BOURGOIN), 1878, A., 879; 1880, A., 471.

action of alkalis on (OST), 1876, i., 252.

behaviour of borax to, and of boric acid to salicylates (JAHNS), 1878, A., 499.

action of chloroform on, in alkaline solution (REIMER and TIEMANN), 1877, i., 83.

action of diazonaphthalene on (FRANKLAND), 1880, T., 746.

action of, on iron (BARILARI), 1878, A., 151.

action of sodium amalgam on (v. DEN VELDEN), 1877, ii., 338.

**Salicylic acid** (*o*-hydroxybenzoic acid), and sodium salicylate, influence of, on bodily temperature (GEDL), 1877, i., 732.

as an antiseptic and disinfectant (NEUBAUER), 1875, 459; (KOLBE), 1875, 460; 1876, i., 996; (MÜLLER), 1875, 460; (v. WAGNER), 1875, 776; (SCHAR), 1876, i., 99; (v. MEYER and KOLBE), 1876, i., 101; (v. WAGNER), 1876, i., 460; (ROZSNYAY), 1876, i., 805; (v. HEYDEN), 1878, A., 456; (SCHULTZ), 1880, A., 515; (SCHLUMBERGER), 1881, A., 860; (ROBINET and PELLET; BERSCH), 1882, A., 1010.

antiseptic action of, on beer-wort (HEMPEL), 1876, i., 711; (v. MEYER and KOLBE), 1876, i., 959.

preservation of wine by means of (DENUCÉ), 1882, A., 1014.

use of, in the dairy (PORTELE), 1881, A., 1185.

as a preventive of house-fungus (FARSKÝ), 1879, A., 1080.

use of, in arresting the transformation of starch (BROWN and HERON), 1879, T., 630.

destructive action of wood on (KOLBE), 1880, A., 520; 1881, A., 212.

and other bodies, influence of, on germination (HECKEL), 1879, A., 172; 1880, A., 335.

and ferric chloride, physical investigation of the coloured solution of (v. BRÜCKE), 1878, A., 106.

and carbon dioxide, synthesis of polybasic acids by means of (OST), 1876, ii., 521.

preparation of pure *p*-hydroxybenzoic acid from (KOLBE), 1875, 459.

conversion of, into salicylaric acid in the animal organism (PICCARD and BECK), 1876, i., 950.

compounds of, with albuminoids (FARSKÝ), 1878, A., 224.

quinine salts of (v. JOBSTR), 1876, i., 610.

application of, to titration (WEISKE), 1876, i., 113.

metallic salts of, and their application (VULPIUS), 1879, A., 641.

boron salt of (JAHNS), 1878, A., 500.

calcium salt of, decomposition of, by dry distillation (GOLDSCHMIEDT and HERZIG), 1882, A., 617.

iron salt of, formation of (BARILARI), 1878, A., 151, 317.



- Salicylic acid** (*o*-hydroxybenzoic acid), ferric salt of, conditions determining the formation of (V. BRÜCKE), 1878, A., 106.
- iron salts of (FARSKÝ), 1878, A., 225.
- potassium salts of, neutral and basic, action of phosphoryl chloride on (RICHTER), 1882, A., 618.
- silver salt of, action of iodine on (BIRNBAUM and REINHIERZ), 1882, A., 970.
- sodium salt of, influence of, on bodily temperature (GEDL), 1877, i., 732.
- decomposition of, in the organism (BINZ), 1876, ii., 319.
- sodium salts of (HOFFMANN), 1878, A., 499.
- neutral and basic, action of phosphoryl chloride on (RICHTER), 1882, A., 618.
- tests for (KOLBE), 1876, ii., 663; (ALMÉN), 1877, ii., 360.
- detection of, in beer (BLAS), 1879, A., 343.
- detection of, in urine (ROBINET), 1878, A., 247; (CAZENEUVE), 1879, A., 488; (PAGLIANI), 1879, A., 748; (BORNTRÄGER), 1881, A., 472.
- detection of, in wine and in fruit juices (WEIGERT), 1880, A., 352.
- detection of, in wines (ROBINET), 1878, A., 247.
- simple method of estimating the value of commercial, and of detecting it in milk and similar organic solutions (MUTER), 1877, ii., 227.
- estimation of (HAGER), 1878, A., 247.
- estimation of, in animal secretions (CAZENEUVE), 1879, A., 488.
- estimation of, in beverages (RÉMONT), 1881, A., 944.
- estimation of, in butter, milk, and urine (PELLET), 1882, A., 1003.
- estimation of, in food-stuffs by a colorimetric reaction (PELLET and V. GROBERT), 1881, A., 1175.
- separation of (BLYTH), 1877, ii., 931.
- Salicylic acid**, 5-amido-, and its sulphate (HÜBNER), 1879, A., 381.
- 3:5-dibromo- (HÜBNER), 1878, A., 148.
- 5-chloro- (HÜBNER and WEISS), 1873, 756; (HÜBNER and BRENNEN), 1873, 756; (BEILSTEIN), 1875, 1195; (HASSE), 1878, A., 416; (SMITH), 1878, A., 879.
- nitration of (SMITH and PEIRCE), 1880, A., 392.
- Salicylic acid**, 3:5-dichloro- (SMITH), 1878, A., 879.
- 5-chloronitro-, and its salts (SMITH and PEIRCE), 1880, A., 392.
- chlorodinitro- (HASSE), 1878, A., 416.
- 3-iodo- (MILLER), 1882, T., 398.
- 5-iodo- (HÜBNER), 1879, A., 928; (FRANKLAND), 1880, T., 749.
- conversion of, into 2:5-dihydroxybenzoic acid (MILLER), 1882, T., 404.
- 5-iodonitro- (HÜBNER), 1879, A., 928.
- 3- and 5-nitro-, and their salts (HÜBNER), 1876, i., 593; 1878, A., 150; 1879, A., 380; (SCHIFF and MASINO), 1880, A., 121.
- 5-nitro- (HASSE), 1878, A., 416; (GRIESS), 1879, A., 246; (HÜBNER, BABCOCK and SCHAUMANN), 1879, A., 928.
- 3-, 5-, and 6-nitro- (HALL), 1875, 263.
- 3:5-dinitro-, and its salts (SALKOWSKI), 1875, 71; (HÜBNER), 1878, A., 150; 1879, A., 382; (HÜBNER, BABCOCK and SCHAUMANN), 1879, A., 928.
- See also Hydroxybenzoic acids.
- Salicylic alcohol**. See Saligenin.
- Salicylic chloride** 5-chloro- (BEILSTEIN), 1875, 1195.
- Salicyl-o-nitranilide**, and the action of nascent hydrogen on (MENSCHING), 1880, A., 556.
- Salicyl-m-nitranilide** (WANSTRAT), 1873, 907.
- Salicyl-p-nitranilide** (HAARMANN), 1873, 907.
- Salicylnitranilides**, action of reducing agents on (BELL), 1875, 1201.
- Salicylphenol** (2:4'-dihydroxybenzophenone) (MICHAEL), 1881, A., 592.
- Salicylphenylthiocarbamide** (MIQUEL), 1877, ii., 870.
- Salicylresorcinol**. See Trihydroxybenzophenone.
- Salicylthio-carbamide** and -carbimide (MIQUEL), 1877, ii., 869.
- Salicyl-p-tolnide** (WANSTRAT), 1873, 907.
- Salicyltropeine** (*o*-hydroxybenzoyltropeine) (LADENBURG), 1880, A., 410, 714.
- Salicyluric acid**, conversion of salicylic acid into, in the animal organism (PICCARD and BECK), 1876, i., 950.
- Saligenin** (*saligenol*; *o*-hydroxybenzylalcohol; *salicylic alcohol*), synthesis of (GREENE), 1880, A., 318.
- action of mannitol and of glycerol on (GIACOSA), 1880, A., 716.

- Saligenin** (*saligenol*; *o-hydroxybenzylic alcohol*; *salicylic alcohol*), derivatives of (BÖTSCH), 1882, A., 174.
- Saline dust**, character of flames charged with (GOUV), 1877, ii., 817.
- Saline mixtures**, solubility of (RÜDORFF), 1873, 1101, 1102.
- Saline solutions**. See Solutions.
- Saliretin**, glucoside of (MICHAEL), 1879, A., 1038.  
homologue of (SCHOTTEN), 1878, A., 877.
- Saliretone** (GIACOSA), 1880, A., 716.
- Salite** as a constituent of rocks (KALKOWSKY), 1876, i., 195.
- Saliva**, human, composition of (HAMMERBACHER), 1882, A., 754.  
effect of alcohol on (WATSON), 1879, T., 539.  
diastatic action of (CHITTENDEN and GRISWOLD), 1882, A., 319.  
influence of peptones on (CHITTENDEN and ELY), 1882, A., 1117.  
action of, on different kinds of starch (LEFBERG and GEORGIEFSKI), 1876, ii., 398.  
action of, on starch, and on a mixture of starch and alcohol (WATSON), 1879, T., 541.  
transformation of glycogen into grape-sugar by (SEEGER), 1877, ii., 911; 1879, A., 548.  
presence of ammonia in (HEYWARD), 1882, A., 78.  
indications of a nitrite in (BÖTTGER), 1873, 536.  
peptone forming ferment in (MUNK), 1877, ii., 347.  
abnormal presence of uric acid in (BOUCHERON), 1881, A., 1161.  
detection of cyanogen sulphide in (BÖTTGER), 1873, 536.  
test for nitrites in (GRIESS), 1879, A., 630.
- Salix alba**. See Willow, white.
- Salmon roe**, protamine, guanine and sarcine in (PICCARD), 1875, 566.
- Salt**, common. See Sodium chloride.
- Salt-bush** of New South Wales (DIXON), 1881, A., 1067.
- Salt-cake**. See Sodium sulphate.
- Salt earth** from the primeval forest of Brazil, composition of (LUDWIG), 1873, 483.
- Salt mines** of Stassfurt, minerals in the (KRAUSE), 1876, i., 346.
- Saltpetre**. See Potassium nitrate.  
Chili. See Sodium nitrate.
- Salts**, naturally occurring (VOLGER), 1874, 671.
- Salts** of the Algerian marshes (LE CHATELIER), 1877, ii., 176.  
obtained from the mother-liquors of the brine-springs of Volterra (FENARO), 1878, A., 652; 1880, A., 146.  
preparation of, in a finely divided state (BÖTTGER), 1879, A., 107.  
part played by time in the formation of (BERTHELOT), 1881, A., 344.  
volume relations in the formation and decomposition of (MÜLLER-ERZBACH), 1881, A., 219.  
influence of substitution on evolution of heat during the formation of (LUGININ), 1879, A., 767, 871.  
constitution of acids and, in solution (BERTHELOT), 1876, i., 513.  
electrical conductivity of solid (GROSS), 1878, A., 363.  
electrical conductivity of fused (BRAUN), 1875, 30, 996.  
mixed, development of heat by the solution of, in water (WINKELMANN), 1874, 1049.  
heat of solution of some mixtures of (CHRUSTSCHOFF), 1882, A., 1257.  
thermochemistry of double decomposition in aqueous solutions of (POTILIZIN), 1881, A., 6, 869.  
union of, by pressure (SPRING), 1881, A., 501; 1882, A., 273.  
a law in the diffusion of (SACHSSE), 1874, 1054.  
simultaneous diffusion of certain (MARIGNAC), 1875, 35.  
change produced by diffusion in the reaction of a solution of mixed (MALY), 1876, i., 875.  
coercive action of, on water (FAVRE and VALSON), 1873, 129.  
dissociation of crystallised (FAVRE and VALSON), 1873, 31, 32, 129; 1874, 120, 650; 1875, 330.  
hydration of (CROSS), 1882, A., 12; (HAMMERL), 1882, A., 1163.  
decomposition of, by liquids (DITTE), 1881, A., 17.  
decomposition of certain, by water (DITTE), 1875, 232, 332.  
determination of the solubility of (LIMPRICHT), 1875, 730.  
method of determining the exact solubility of (LAJOUX), 1876, i., 184.  
relations between the solubility of, and the amount of their water of crystallisation (SCHERBATSCHOFF), 1874, 333.

- Salts**, state of, in solution (BERTHELOT and DE SAINT MARTIN), 1873, 35; (BERTHELOT), 1873, 236; (GERNEZ), 1877, ii., 273.
- influence of temperature on the distribution of, in solution (SORET), 1881, A., 5.
- experiments on supersaturated solutions of mixed (THOMSON), 1879, T., 196.
- See also Solution.
- action of acids on (LORIN), 1879, A., 689.
- action of animal charcoal on (LIEBERMANN), 1878, A., 109.
- action of solutions of, on copper (CARNELLEY), 1876, ii., 7.
- containing the same haloid elements, action of the haloid acids on (BERTHELOT), 1881, A., 868.
- action of hydrochloric acid on (THOMAS), 1878, T., 367.
- action of oxides on (MILLS and WILSON), 1878, T., 360; (MILLS and PRATT), 1879, T., 336; (MILLS and MEANWELL), 1881, T., 533; (MILLS and DONALD), 1882, T., 18.
- action of sulphuric acid of specific gravity 1.843 on certain (GARSIDE), 1875, 1287.
- gyratory movement of certain, on the surface of water (LESCŒUR), 1876, i., 876.
- certain, influence of, on digestion (WOLBERG), 1881, A., 752, 834.
- influence of certain, in saccharimetry (MÜNTZ), 1876, ii., 552.
- alkalinity or acidity of, as indicated by test papers (SKEY), 1873, 1159.
- titration of normal, which have an acid reaction (WILLGERODT), 1876, ii., 214.
- acid, new series of (LESCŒUR), 1874, 870; (VILLIERS), 1877, ii., 428.
- anhydrous, rehydration of (CROSS), 1879, T., 799.
- basic, constitution of (BERTELS), 1875, 1237.
- double, existence of, in solution (INGENHOES), 1880, A., 32.
- crystallisation from supersaturated solutions of (THOMSON and BLOXAM), 1882, T., 379.
- examination of, by the time method (HANNAY), 1877, ii., 381; 1879, T., 456.
- Epsom. See Magnesium sulphate.
- etheral. See Etheral salts.
- haloid. See Halogen salts.
- hydrated, heat of formation of (THOMSEN), 1879, A., 6.
- Salts**, hydrated, action of heat on solutions of (TICHBORNE), 1873, 34.
- relation of the volumes of solutions of, to their water of composition (SOUTHWORTH), 1880, A., 212.
- dissociation of (WIEDEMANN), 1874, 946, 1131; (DEBRAY), 1875, 730; (PRECHT and KRAUT), 1876, i., 185.
- insoluble, influence of time and mass in producing (MUIR), 1878, T., 27.
- isomorphous, molecular volumes of (PETTERSSON), 1874, 760; 1877, i., 267, 437; 1882, A., 1259.
- refractive index of mixtures of (DUFFET), 1878, A., 631; 1881, A., 2.
- action of, in exciting the crystallization of supersaturated solutions of each other (THOMSON), 1879, T., 196.
- metallic, presence of, in foods (PAUL and KINGZETT), 1877, ii., 912.
- boiling points of (CARNELLEY and WILLIAMS), 1878, T., 281; 1879, T., 563; 1880, T., 125.
- melting points of (CARNELLEY), 1876, i., 489; 1877, i., 365; 1878, T., 275.
- relation between the isomorphism, atomic weights, and toxic effects of (BLAKE), 1875, 96; 1881, A., 629; 1882, A., 879.
- galvanic properties of solutions of (FREUND), 1879, A., 863.
- decomposition of, and certain inverse reactions which take place in presence of water (DITTE), 1879, A., 1006.
- reactions of various (MYERS), 1873, 845.
- action of hydrochloric acid on (THOMAS), 1878, T., 367.
- action of magnesium on (KERN), 1876, i., 683, 880; ii., 479.
- action of ozone on (MAILFERT), 1882, A., 1161.
- influence of, on the growth of *Aspergillus niger* (ANON.), 1873, 648.
- absorption of, by the soil (TUXEN), 1881, A., 1165.
- Salt works** at Allendorf on Werra, bitterns of (REICHARDT), 1882, A., 24.
- of West Virginia, examination of bitterns from, for iodine (BAKER), 1882, A., 25.
- Salviol** and its reactions (SEGUIRA and MUIR), 1878, T., 295; (MUIR), 1880, T., 680.

- Salylic acid**, chemical nature of (KOLBE), 1876, i., 255.  
chloro-, action of alkalis on (OST), 1876, i., 252.  
See also Benzoic acid.
- Samarium** (LECOQ DE BOISBAUDRAN), 1879, A., 889; (DELAFONTAINE), 1880, A., 611; 1881, A., 979.  
absorption-spectrum of (SORET), 1881, A., 349.
- Samarските** (SMITH), 1877, ii., 576, 715; (RAMMELSBERG), 1878, A., 944; (HIDDEN), 1881, A., 1110.  
from N. Carolina, composition of (ALLEN), 1878, A., 206.  
metals of (DELAFONTAINE), 1879, A., 116, 117; 1880, A., 611; (MARIGNAC), 1881, A., 73; (ROSCOE), 1882, T., 277.  
See also Cerium metals, and Earths, rare.
- Sambucus canadensis*, bark of (TRAUB), 1881, A., 1163.
- Sambucus nigra* (elder tree), composition of the ash of the bark of (WITTSTEIN), 1876, i., 736.
- Sandal wood**, colouring matter of (FRANCHIMONT and SICHERER), 1879, A., 470.
- Sanidine** crystals found in drusy spaces in the doleritic lava of Bellingen, Westerwald (VOM RATH), 1876, ii., 54.  
pseudomorph, after leucite (GEINITZ), 1877, i., 699.
- Santonic acid** (HVOSLEF), 1874, 360.  
formation of, from santonin (CANNIZZARO and SESTINI), 1873, 1229.  
and santonin, action of acetic chloride on (SESTINI), 1875, 895.  
action of nascent hydrogen on (CANNIZZARO and SESTINI), 1873, 1231.  
action of phosphorus pentachloride on (CANNIZZARO and CARNELUTTI), 1881, A., 286.  
derivatives of (CANNIZZARO), 1877, i., 470.  
metallic salts of (CANNIZZARO and SESTINI), 1873, 1230.
- metaSantonic acid* (CANNIZZARO), 1877, i., 471.
- paraSantonide*, specific rotatory power of (NASINI), 1881, A., 919.
- Santonin** (DE SAINT MARTIN), 1873, 162; (CANNIZZARO and SESTINI), 1873, 1229.  
absorption-spectra of, in solution (MEYER), 1879, A., 269.  
action of acetic chloride on (SESTINI), 1875, 895.
- Santonin**, action of hydriodic acid on (CANNIZZARO and AMATO), 1875, 163.  
colour reaction of, with antimony trichloride (SMITH), 1879, A., 832.  
derivatives (CANNIZZARO and VALENTE), 1879, A., 331; (CANNIZZARO and CARNELUTTI), 1881, A., 53.  
rotatory powers of (CARNELUTTI and NASINI), 1881, A., 180.  
crystalline form of (STRÜVER), 1877, i., 472.  
metallic derivatives of (CANNIZZARO and SESTINI), 1873, 1231.  
bromide (CANNIZZARO and SESTINI), 1873, 1231.  
test for (LINDO), 1878, A., 167.
- metaSantonins*,  $\alpha$ -mono- and di-bromo- (CANNIZZARO and AMATO), 1875, 163; (CANNIZZARO and CARNELUTTI), 1879, A., 330; 1881, A., 285.
- Santoninic acid** (HESSE), 1874, 272.
- Santonol** (DE SAINT MARTIN), 1873, 162.
- Santorin** and its eruption (FOUGRÉ), 1881, A., 558.
- Sap.** See under Agricultural Chemistry.
- Sapindus Saponaria*, butyric acid in the fruit of (GRÜNZWEIG), 1873, 375.
- Saponin**. See under Glucosides.
- Saponite**. See Steatite.
- Sapphire** and ruby, occurrence of, with corundum in the Culsagee Mine, Macon Co., N. Carolina (JENKS), 1875, 625.  
cause of the blue colour of (ROSS), 1882, A., 1269.
- Sapphirine** (TSCHERMAK and SIPÖCZ), 1881, A., 234.  
See also Siderite.
- Sarcine**. See under Alkaloids.
- Sarcolactic acid**. See Paralactic acid under Lactic acid.
- Sarcosine** (*methylamidacetic acid*; *methylglycocine*), action of potassium cyanate on (SALKOWSKI), 1874, 464.  
behaviour of, in the organism (BAUMANN and V. MERING), 1875, 1044.  
decomposition of, in the human body (SCHIFFER), 1882, A., 78.  
compound of guanidine and (BAUMANN), 1875, 146.
- Sarcosinic acid** (HERTZ), 1877, i., 479.
- Sarracenia purpurea* (HÉTET), 1879, A., 541.
- Sarsaparilla**, saponin of (FLÜCKIGER), 1878, A., 327.



- Satureia hortensis*. See Sage, garden.  
*Satureia Juliana*, constituents of (SPICA), 1880, A., 128.
- Sausages**, adulteration of (FISCHER), 1880, A., 422.  
 coloured with aniline (REICHARDT), 1874, 98.  
 estimation of starch in (MEDICUS and SCHWAB), 1879, A., 979;  
 (FRICKHINGER), 1880, A., 826.
- Saussurite-gabbro**, composition of (HIORTDAHL), 1881, A., 698.
- Savin**, terpene from the essential oil of (TILDEN and SHENSTONE), 1877, i., 560.
- Savory**, oil of (HALLER), 1882, A., 737.
- Sawdust**, preparation of oxalic acid from (THORN), 1874, 297.
- Saynite**. See Grünauite.
- Scammony**, new method for the extraction of resin of (PERRET), 1877, ii., 950.
- Scandium** (NILSON), 1879, A., 601;  
 (CLEVE), 1880, A., 7.  
 atomic weight of (NILSON), 1880, A., 850.  
 bright-line spectrum of (THALÉN), 1880, A., 635.  
 salts of (CLEVE), 1880, A., 8;  
 (NILSON), 1880, A., 850.  
 hydroxide (CLEVE), 1880, A., 8.  
 oxide (*scandia*) (CLEVE), 1880, A., 7;  
 (NILSON), 1880, A., 850.
- Scapolite** (*vernerite*) from Bucks Co., Pennsylvania (LEEDS), 1874, 29.  
 from Monte Monzoni (VOM RATH), 1881, A., 549.
- Scapolites**, peculiar mineral of the (SHEPARD), 1881, A., 381.  
 presence of chlorine in (ADAMS), 1879, A., 697.
- Scarlet runner** (*Phaseolus multiflorus*), function of lime in the germination of (BÖHM), 1875, 1284.  
 absorption of water and lime-salts by the leaves of (BÖHM), 1877, ii., 209, 350.
- Scatole**. See 3'-Methylindole.
- Schaalenblende** (FISCHER), 1881, A., 990.
- Scheelite** (CARNOT), 1875, 45; (LIVERSIDGE), 1881, A., 995.  
 association of gold with, in Idaho, U.S. (SILLIMAN), 1877, ii., 713.  
 estimation of cerium metals in (COSSA), 1879, A., 696.  
 See also Calcium tungstate.
- Scheidsberg**, mineral constituents of the, near Remagen on the Rhine (MÖHL), 1874, 667.
- Schieferspath** (HAUGHTON), 1881, A., 383.
- Schirmerite** (GENTH), 1875, 432.
- Schizomycetes**, vital power of, in absence of oxygen (GUNNING), 1880, A., 277.
- Schizomycetic fermentation**. See Fermentation.
- Schneebergite**, a new mineral (BREZINA), 1882, A., 150.
- Schorlomite** of the Kaiserstuhl (KNOP), 1878, A., 118.
- Schröckingerite**, a new mineral from Joachimsthal (SCHRAUF), 1874, 134.
- Schröterite** (HELMHACKER), 1881, A., 541.
- "Schrot-brod"** (VOGEL), 1873, 424.
- Sclerotic acid**, the active principle of ergot (BUCHHEIM), 1876, i., 610;  
 (ANON.), 1877, ii., 628.
- Scolecite** (SCHMID), 1882, A., 582.  
 from Poonah (PETERSEN), 1874, 450.
- Scolecites** (LUEDECKE), 1881, A., 1007.
- Scollop**, American, composition of the muscular tissue of (CHITTENDEN), 1875, 1275.
- Scopolia japonica* (MARTIN), 1879, A., 333.
- Scopoline**. See Oscine under Alkaloids.
- Scorodite**, occurrence of, in greenstone (COLLINS), 1877, ii., 283.  
 from Dermbach near Montabond (v. LASAULX), 1875, 1244.  
 from the Urals (v. KOKSCHAROFF), 1876, i., 887.  
 artificial production of (VERNEUIL and BOUTGEOS), 1880, A., 613.
- Scovillite**. See Rhabdophane.
- Sea mud**. See Mud.
- Sea water**. See Water.
- Sea-depths**, sounding of (BUCHANAN), 1878, T., 448.
- Seaweed**, charcoal from (STANFORD), 1878, A., 170.  
 iodine from (STANFORD), 1878, A., 169; (GALLOWAY), 1878, A., 1017;  
 (ALLARY and PELLIEUX), 1881, A., 207, 319; (THIERCELIN), 1881, A., 318; (ALLARY), 1881, A., 319.  
 potassium from (ANON.), 1877, i., 237.
- Sebacic acid** (*iponic acid*) (WITT), 1874, 569; (NEISON and BAYNE), 1874, 729; (BECKER), 1878, A., 853.  
 formation of, by the distillation of crude fatty acids in superheated steam (CAHOUS and DEMARÇAY), 1880, A., 540; 1882, A., 715.  
 formation of, from castor-oil (NEISON), 1874, 301.  
 dry distillation of, with lime (DALE and SCHORLEMMER), 1879, T., 687.

- Sebacic acid** (*ipomic acid*), metallic salts of (NEISEN), 1874, 303; 1876, i. 325.
- Sebanilic acid**, and **sebanilide** (MAILLOT), 1879, A., 377.
- Secondary batteries**. See Accumulators under Electrochemistry.
- Secondary currents**. See Currents under Electrochemistry.
- Seebachite**, a new zeolite from Victoria (BAUER), 1874, 1067.
- Seedlings**, passage of plant material in (DETMER), 1880, A., 335.  
formation of sulphuric acid in (SCHULZE), 1877, i., 104.
- Seeds**. See under Agricultural Chemistry.
- Selenates and selenides**. See under Selenium.
- Selenines** (*selenonium*) compounds (JACKSON), 1876, i., 581.
- Selenious anhydride**. See Selenium dioxide.
- Selenious bismuth glance** (FRENZEL), 1874, 1141.
- Selenium mineral** (*zorgite*) from the Argentine Republic (BILLAUDOT), 1882, A., 1269.
- Selenium**, occurrence of, in Japan (DIVERS), 1882, A., 362.  
in silver (DEBRAY), 1876, ii., 380.  
atomic weight of (PETTERSSON and EKMAN), 1877, i., 44.  
crystalline form and molecular modifications of (RAMMELSEBERG), 1874, 769.  
electrical conductivity of (EARL OF ROSSE), 1874, 861; (SIEMENS), 1877, i., 677; 1878, A., 361; (FORSSMAN), 1878, A., 360.  
action of light on the electrical resistance of (SALE), 1873, 998.  
condensation of mercury vapour on, in the Sprengel vacuum (MOSS), 1876, ii., 271.  
affinity of oxygen for (THOMSEN), 1873, 1191.  
vapour-density of (SAINTE-CLAIRE DEVILLE and TROOST), 1880, A., 847.  
solubility of, in sulphuric acid (HILGER), 1874, 654.  
action of, on metallic sulphides (POTILIZIN), 1879, A., 771.  
absorption of, by plants (CAMERON), 1879, A., 955.
- Selenium alums** (PETTERSSON), 1874, 337.
- Selenium**, compounds of (CAMERON and DAVY), 1881, A., 1099.  
with sulphur and oxygen (WEBER), 1876, i., 677.
- Selenium**:—  
hydrogen selenide (*seleniuretted hydrogen*), preparation of (ETARD and MOISSAN), 1881, A., 18.  
decomposition of, by mercury (BERTHELOT), 1880, A., 150.  
selenides, metallic (MARGOTTET), 1877, ii., 570.  
dioxide (*selenious oxide*; *selenious anhydride*), specific gravity of (CLAUSNIZER), 1879, A., 691.  
action of halogen acids on (DITTE), 1876, ii., 476; 1877, i., 45.  
selenious acid, constitution of (MICHAELIS and LANDMANN), 1880, A., 607.  
specific gravity of (CLAUSNIZER), 1879, A., 691.  
reduction of, by grape sugar (STOLEA), 1874, 872.  
and tellurous acids, detection of (HILGER), 1875, 103.  
selenites (NILSON), 1875, 420, 865, 1238.  
selenic acid and selenates (v. GERICHTEN), 1873, 725.  
selenates, volume-constitution of (SCHRÖDER), 1879, A., 768; 1881, A., 137.  
molecular volumes of (PETTERSSON), 1877, i., 267, 437.  
selenic acid, estimation of (PETTERSSON), 1874, 289.  
sulphides (v. GERICHTEN), 1874, 436.  
thio-oxytetrachloride (CLAUSNIZER), 1879, A., 201, 691.
- Selenium compounds, organic** (JACKSON), 1875, 154, 533, 1024; 1876, i., 580; (v. PIEVERLING), 1877, i., 290; 1878, A., 129; (CAMERON and DAVY), 1881, A., 1099.
- Selenium, detection and estimation**:—  
detection of, in ores (KÜSTEL), 1874, 709.  
methods of estimating, in seleno-carbamides (SPICA), 1877, ii., 189.
- Selenium resistance rods** for photophonic purposes, preparation of (WEINHOLD), 1881, A., 339.
- Selenobenzaldehyde**. See Benzyldenic selenide.
- Selenobenzamide** (v. DECHEND), 1875, 270.
- Selenocarbamides**, and a method of estimating selenium in them (SPICA), 1877, ii., 189.
- Selenocyanates** (CLARKE and DUDLEY), 1879, A., 35.
- Selenodiglycollic acid** (SCHULZE and URICH), 1876, i., 899.

- Selenoethoxychloride** (MICHAELIS and LANDMANN), 1880, A., 608.
- Semigluten** (HOFMEISTER), 1881, A., 294.
- Separators, cream.** See under Agricultural Chemistry.
- Sepiolite.** See Meerschaum.
- Septicine**, an alkaloid formed during putrefaction (HAGER), 1876, i., 405.
- Sequoiene** from *Sequoia gigantea* (LUNGE and STEINKAULER), 1881, A., 98; 1882, A., 208.
- Sericite** of Hallgarten, in the Rheingau (LASPEYRES), 1881, A., 543.
- Sericite rocks** of the Taunus (WICHMANN), 1879, A., 23.
- Sericite-gneiss** in the Alps (v. GÜMBEL), 1879, A., 25, 207.
- Serin.** See  $\alpha$ -Amidolactic acid.
- iso***Serin.** See  $\beta$ -Amidohydroacrylic acid.
- Serous effusion**, composition of a (HILGER), 1875, 776.
- Serpentine** (PETERSEN), 1873, 735; (v. DRASCHE), 1873, 1010; (SCHARIZER), 1881, A., 544.  
from the Jupiter-Tagbau (v. ZEPHAROVICH), 1881, A., 997.  
of the Saxon granulite district (DATHE), 1876, ii., 387, 612.  
and olivine of Snarum (HELLAND), 1873, 607.  
of the St. Gothard, of the Bobbiese Apennine, and of Monteferrato, near Prato (COSSA), 1882, A., 586.
- Tuscan**, composition of (COSSA), 1881, A., 1012.  
from Verrayes, in the Valley of Aosta (COSSA), 1879, A., 362; 1881, A., 693.  
occurrence of chromite in (HELLAND), 1877, ii., 120.  
manganous, from Långban (PAJUKULL), 1879, A., 32.  
See also Magnesium silicate.
- Serum**, non-identity of the albuminoids of crystallin with (BÉCHAMP), 1880, A., 815.  
reaction of, with sodium tungstate (SONNENSCHNIG), 1874, 296.
- Serum** of Herbivora, amount of disodium orthophosphate in (MRATSKOWSKY), 1878, A., 519.  
See also Proteids.
- Serum albumin.** See Albumin.
- Serum, blood-.** See Blood-serum.
- Sewage**, report on the treatment of (SMITH), 1880, A., 767.  
purification and utilisation of (GRANTHAM), 1874, 100; (MÜLLER), 1878, A., 164; 1881, A., 842.
- Sewage**, utilisation of (LADUREAU), 1882, A., 248.  
precipitation, chemistry of (WALLACE), 1881, A., 662.  
effect of aluminium sulphate on (GRAHAM), 1877, i., 355.  
of manufacturing towns (McGOWAN), 1874, 100.  
of Paris (LAUTH), 1877, ii., 524.  
in oysters (CAMERON), 1881, A., 953.  
reduction of nitrates by (HATTON), 1881, T., 266.  
See also under Agricultural Chemistry.
- Sewers**, effect of, on the purity of the soil (WOLFFHÜGEL), 1877, i., 240.
- Seybertite** (TSCHERMAK and ŠIŘOČZ), 1881, A., 233.
- Shale** and petroleum products, relative proportions of olefines in (ALLEN), 1882, A., 100.  
carbonaceous, effects of pressure and cold on gaseous products of distillation of (COLEMAN), 1875, 856.
- Shark**, cartilage of the (PETERSEN and SOXHLET), 1873, 1243.
- Shea butter** (*ghea butter*) (DEITE), 1879, A., 568.
- Sheep.** See under Agricultural Chemistry.
- Shekel**, Hebrew, composition of (FLIGHT), 1882, T., 144.
- Shellac** (HERTZ), 1877, i., 479.  
alcoholic solution of (PELTZ), 1876, ii., 678.
- Shellac varnish**, aqueous (EDER), 1881, A., 482.
- Shells** of crabs, oysters, mussels, etc., as manure (SPORER and HENSHAW), 1880, A., 60.  
of hens' eggs during incubation, deportment of (v. VOIR), 1878, A., 525.
- Shikimin** (EJIKMAN), 1881, A., 918.
- Shikimole.** See Saffrole.
- Shingle**, amount of carbonic anhydride in (WOLFFHÜGEL), 1880, A., 181.
- Ships' bottoms**, protective coating for (REDMAN), 1876, i., 131.
- Shoddy**, testing of (SCHLESINGER), 1873, 1168.  
analysis of (HUGHES), 1881, A., 661.
- Shrubs and trees**, effect of coal gas on (ANON.), 1873, 401, 647.
- Sickle**, ancient Egyptian, composition of (FLIGHT), 1882, T., 140.
- Siderite** (LIVERSIDGE), 1881, A., 995.  
See also Lazulite and Sapphirine.
- Siegburgite**, a new fossil resin (v. LASAULX), 1875, 615.
- Signal fireworks**, mixtures for (ANON.) 1873, 1068.

- Silaonite** from Guanajuato (BRUNS), 1878, A., 940.
- Silberkies.** See Argentopyrite.
- "Silber-light"** (ANON.), 1873, 1273.
- Silent discharge.** See under Electrochemistry.
- Silica.** See Silicon dioxide.
- Siliceous substances,** absorption of rosaniline by (SKEY), 1874, 1028.
- Silicic ether** (*ethylic orthosilicate*) and its derivatives, reduction products of (LADENBURG), 1873, 49.  
thermochemistry of (OGIER), 1879, A., 767.
- Silicium.** See Silicon.
- "Silico-acetic acid"** (LADENBURG), 1874, 40.
- Silico-acetic anhydride** (FRIEDEL and LADENBURG), 1873, 52.
- Silicobenzoic anhydride,** and its *ortho*-ether (LADENBURG), 1873, 1026.
- Silicododecane** and bromo- (PAPE), 1882, A., 154.
- "Silicodiethyl ether"** and chloride (LADENBURG), 1873, 49.
- Silicoethyl trichloride** (LADENBURG), 1873, 49.
- Silicoheptyl compounds** (LADENBURG), 1873, 49.
- Silicohexethyl,** preparation of (FRIEDEL and LADENBURG), 1880, A., 609.
- Silicomolybdic acid,** and its salts (PARMENTIER), 1881, A., 880; 1882, A., 702.
- Silicon,** specific heat of (MIXTER and DANA), 1874, 118; (WEBER), 1876, i., 866.  
specific volume of (THORPE), 1880, T., 386.
- Silicon alloy** with manganese, preparation and use of, in casting steel (KERN), 1877, ii., 522.
- Silicon aluminates,** alkaline, synthetic production of (MEUNIER), 1881, A., 350.  
manganese aluminate containing vanadium (PRAXI), 1873, 355.  
sodium aluminate, dialysis of (LE CHATELIER), 1874, 871.  
*hexabromide*, preparation of (FRIEDEL and LADENBURG), 1880, A., 608.  
subfluorides, subchlorides and oxychlorides, and the organic derivatives of the latter (TROOST and HAUTEFEUILLE), 1876, ii., 597.
- tetrachloride*, preparation of (SCHNITZLER), 1874, 959.  
preparation and physical properties of (THORPE), 1880, T., 327.  
heat of vaporisation and specific heat of (OGIER), 1879, A., 767.
- Silicon tetrachloride,** reactions of (TROOST and HAUTEFEUILLE), 1873, 351; 1876, ii., 599.  
*hexachloride*, preparation of (TROOST and HAUTEFEUILLE), 1876, ii., 598; (FRIEDEL and LADENBURG), 1880, A., 608.  
oxychlorides (TROOST and HAUTEFEUILLE), 1873, 746; 1876, ii., 597.  
preparation of (TROOST and HAUTEFEUILLE), 1881, A., 508.  
*trichlorobromide* (FRIEDEL and LADENBURG), 1873, 53.  
chlorohydrosulphide (*trichlorosilicomercaptan*) (FRIEDEL and LADENBURG), 1873, 53.  
*tetrafluoride*, action of, on sodium ethoxide (KLIPPERT), 1875, 1171.  
action of water on (HAMMERL), 1880, A., 435.  
*trihydride* (OGIER), 1880, A., 298.  
*tetrahydride*, liquefaction of (OGIER), 1879, A., 436.  
heat of formation of, and decomposition of, by the electric spark (OGIER), 1879, A., 767.
- hexiodide*, preparation of (FRIEDEL and LADENBURG), 1880, A., 608.
- nitride* (SCHÜTZENBERGER), 1880, A., 153.
- dioxide (silica)*, new locality of, on the island of Vulcano (BALTZER), 1875, 1166.  
grains of, in the atmosphere (PHIPSON), 1881, A., 645.  
in grasses (WILSON), 1877, i., 336.  
peculiar mineralogical condition of (MARCHAND), 1874, 777.  
crystalline, peculiar occurrence of (HÜBENER), 1875, 239.  
new crystallised form of, discovered by Maskelyne in the meteorite of Breitenbach (VOM RATH), 1874, 554.
- crystallisation of, in the dry way (HAUTEFEUILLE), 1878, A., 645, 704.  
crystallisation of, from fused metals (MARSDEN), 1882, A., 571.
- gelatinous, manufacture of, from blast-furnace slags (AMENC, CRIANDI, FABRE and MILIUS), 1877, ii., 239.
- absorption of water by (VAN BEMMELEN), 1880, A., 849.
- action of, on potassium carbonate (MILLS and WILSON), 1878, T., 362.



- Silicon dioxide** (*silica*), and some analogous oxides, action of, on sodium carbonate at high temperatures (MALLARD), 1873, 135, 243.
- solubility of, in aqueous ammonia (SOUCHAY), 1873, 473.
- in mortar, action of lime on (ROBERTS), 1880, A., 216.
- separation of, and the formation of oolite (KNOP), 1874, 673.
- detection of, by means of the microscope (REINSCH), 1882, A., 245.
- See also Quartz and Tridymite.
- Silicic acid**, transparent (MONIER), 1878, A., 770.
- amorphous (MASCHKE), 1873, 243.
- gelatinous, an inorganic membrane (ULLIK), 1879, A., 199.
- hydrated (GOTTLIEB), 1873, 351.
- effect of, on the estimation of phosphoric acid by ammonium molybdate (JENKINS), 1876, ii., 115; 1877, i., 344.
- estimation of phosphoric acid in presence of (ATKINSON), 1877, ii., 353.
- Silicates**, formation of (WARTHA), 1874, 444.
- crystallized, artificial production of (FREMY and FEIL), 1878, A., 203.
- natural, constitution of (V. HAUSHOFFER), 1874, 27.
- opalescence produced by, in phosphorus salt (CHAPMAN), 1877, i., 489.
- containing fluorine, behaviour of, at high temperatures (RAMMELSBURG), 1879, A., 772.
- decomposition of (LEMBERG), 1880, A., 503; (ILES), 1881, A., 645.
- decomposition of, by bismuthic oxide (HEMPEL), 1882, A., 552.
- disintegration of (STÖCKMANN), 1877, i., 340.
- natural, application of, in the manufacture of glass (WAGENER), 1882, A., 1245.
- analysis of (BONG), 1878, A., 336, 915.
- estimation of alkali-metals in, and in substances not attacked by acids, by means of barium hydroxide (TERREIL), 1876, i., 746.
- estimation of ferrous oxide in (EARLY), 1875, 286; (DOELTER), 1879, A., 484.
- which are insoluble in the ordinary mineral acids, new method of estimating ferrous oxide in (LEEDS), 1877, ii., 649.
- Silicates**, separation of quartz from (LAUFER), 1878, A., 336; (WUNDERLICH), 1882, A., 894.
- Hydrofluosilicic acid**. See under Fluorine.
- Silicon** lithium silicates (HAUTEFEUILLE and MARGOTTET), 1882, A., 278.
- sulphide, heat of formation of (SABATIER), 1880, A., 523; 1881, A., 494.
- Silicon organic compounds** (LADENBURG), 1873, 49, 488, 1026; 1874, 40, 803; (SCHÜTZENBERGER and COLSON), 1882, A., 570; (COLSON), 1882, A., 933.
- thiocyanate (MIQUEL), 1877, i., 705; ii., 872.
- Silicon**, estimation of, in iron and steel. See under Iron.
- Silicon-iron**. See Ferrosilicon.
- Silico-oxalic hydrate**, preparation of (FRIEDEL and LADENBURG), 1880, A., 608.
- Silicophenyltrichloride** (LADENBURG), 1873, 1026; 1874, 803.
- "Silicopropionic acid"** (LADENBURG), 1873, 49.
- methyl *orthoether* of (LADENBURG), 1873, 488.
- Silicopropionic ethers** (LADENBURG), 1873, 49; (CAHOURS), 1873, 871.
- Silicopropyl compounds** (PAPE), 1882, A., 154.
- Silicotriethyl ether**. See Silicoheptyl ether.
- Silk**, heat conductivity of (SCHUHMEISTER), 1878, A., 831.
- raw, influence of the chemical composition of the water used in the preparation of (GABBA and TEXTOR), 1879, A., 493.
- and fibroin, constitution of (SCHÜTZENBERGER and BOURGEOIS), 1876, i., 719.
- solubility of, in an alkaline glycerol-copper solution (LOEWE), 1877, ii., 379.
- weighting of (KÖNIGS), 1880, A., 935.
- direct combination of, with chromic acid (JACQUEMIN), 1874, 1192.
- bleaching of raw Egger-moth, and other so-called wild silks (ANON.), 1877, ii., 243.
- use of molybdic acid for the blue colouring of (ANON.), 1873, 306.
- and wool, separation of, in textile fabrics (RÉMONT), 1881, A., 1177.
- Silk cocoons**, composition of (RENOUARD), 1879, A., 952.
- Silk industry** (ANON.), 1877, ii., 524.

- Silk-paper**, waterproof (JACOBSEN), 1874, 500.
- Sillimanite** in the gneiss of the Morvan (MICHEL-LÉVY), 1881, A., 1005.
- Silt analysis**. See under Agricultural Chemistry.
- Silver**, native, from Cornwall (CHURCH), 1875, 737.
- presence of, in commercial bismuth subnitrate (EKIN), 1873, 308.
  - presence of metallic, in galena (PHIPSON), 1874, 662.
  - state in which it exists in minerals, rocks, and artificial products (CUMENGE and FUCHS), 1879, A., 509.
  - extraction of (ANON.), 1882, A., 346.
  - extraction of, by means of calcium thiosulphate (ANON.), 1877, i., 352.
  - extraction of, in the moist way (GUYARD), 1876, ii., 124.
  - methods of extracting, in Mexico (LAUR), 1873, 416.
  - extraction of, from cast-iron crucibles used in coinage (JAVORSKY and PIWOZNIK), 1876, i., 453.
  - extraction of, from ores containing copper (HADDAN), 1879, A., 496.
  - extraction of, from fahlores (ANON.), 1879, A., 755.
  - extraction of, from pyrites (CLAUDET), 1873, 97; (GIBB), 1875, 921; (DIXON), 1879, A., 288.
  - separation of, from lead (STODDART), 1877, ii., 947; (DONATH), 1881, A., 760.
  - by Keith's process (ANON.), 1879, A., 288, 410.
  - by Schnabel's process (ANON.), 1881, A., 768.
  - and its purification (ROSWAG and GEARY), 1878, A., 819.
  - by means of steam (ANON.), 1874, 1117; (ROZAN), 1876, i., 129.
  - influence of impurities in (KIRCHHOFF), 1878, A., 761.
  - obtaining, by amalgamation in Chili (ANON.), 1873, 1172.
  - direct reduction of, from its sulphide (SEGURA), 1877, ii., 843.
  - quick reduction of, from old solutions by means of phosphorus (KRÜGER), 1873, 245.
  - preparation of, at the Stefans-foundry in the Zips (LANGER), 1881, A., 768.
  - composition of old native (CHURCH), 1874, 879.
  - electrochemical equivalent of (KOHLE-RAUSCH), 1874, 113.
  - melting point of (VIOLE), 1878, A., 106.
- Silver**, crystal-tectonic of (SADEBECK), 1880, A., 613.
- molecular, action of, on carbon chlorides (GOLDSCHMIDT), 1881, A., 707.
  - action of, on *α*-dichloropropionic acid (BECKURTS and OTTO), 1878, A., 290.
  - action of cupric chloride on (RAMMELSBERG), 1881, T., 375.
  - action of hydrogen peroxide on (BERTHELOT), 1880, A., 441.
  - action of nitric acid on (ACWORTH), 1875, 841; (ARMSTRONG and ACWORTH), 1877, ii., 71.
  - action of potassium ferricyanide on, and the conversion of silver negatives (EDER), 1877, ii., 234.
  - oxidation of, by oxygen in presence of water (SKEY), 1876, ii., 608.
  - solubility of, in presence of iodides (DITTE), 1881, A., 1101.
  - spitting of (FLUEGGER), 1879, A., 438.
  - presence of oxygen in (DUMAS), 1878, A., 377.
  - selenium in (DEBRAY), 1876, ii., 380.
  - easy method of cleaning (ELSNER), 1873, 1072.
- Silver alloys**, Japanese (KALISCHER), 1875, 922.
- with copper, liquation, fusibility and density of (ROBERTS-AUSTEN), 1875, 736.
  - with mercury, native (PISANI), 1873, 356.
- Silver salts**, inorganic, action of chlorine on (KRUTWIG), 1881, A., 354.
- solubility of (EDER), 1878, A., 379.
  - reaction of, with barium hypophosphite and with phosphorous acid (RAMMELSBERG), 1873, 13.
  - photographic printing without (ANON.), 1876, i., 460.
  - use of, in the reproduction of designs (RENAULT), 1873, 537.
  - haloid, action of light on (VOGEL), 1873, 948; 1874, 332, 756; 1875, 326; (LEA), 1877, ii., 690; 1878, A., 191; (ABNEY), 1882, A., 565.
  - See also Silver bromide, chloride, and iodide.
- Silver and potassium haloid double salts**, heat of formation of (BERTHELOT), 1882, A., 1019.
- Argentammonium salts** (WIDMAN), 1873, 1106.
- carbonate (KERN), 1875, 1162.
  - iodide (LEA), 1878, A., 936.
  - oxide (PRESCOTT), 1880, A., 852.

**Silver arsenide** (DESCAMPS), 1878, A., 705.

arsenite, insoluble in aqueous ammonia (SANTOS), 1878, A., 936.

bromide (STAS), 1875, 1161.

effect of heat on (RODWELL), 1881, A., 965.

action of light on (VOGEL), 1874, 217, 424; 1876, i., 510; ii., 265; (LEA), 1874, 1044; 1876, i., 28; 1877, i., 266; 1878, A., 650; (BECQUEREL), 1875, 30; (EDER), 1881, A., 762; (NOEL), 1881, A., 862.

action of light of different colours on, impregnated with various organic colouring matters (CROS), 1879, A., 504.

gelatin emulsion (SCHNAUSS), 1880, A., 929; (EDER), 1882, A., 111; (PLENER), 1882, A., 902.

dry plates, new developers for (EDER), 1881, A., 317.

for different portions of the solar spectrum, sensitiveness of (VOGEL), 1880, A., 837; 1881, A., 773.

amount of bromine substituted by chlorine in (POTILZIN), 1879, A., 770.

examination of, by means of bis-muth sulphide (GOLDSCHMIDT), 1877, ii., 356.

See also Silver haloid salts.

subchloride (*argentous chloride*) (v. BIBRA), 1875, 1162; 1876, i., 43.

chloride (*argentie chloride*) (STAS), 1875, 1161.

action of light on (v. BIBRA), 1875, 1162; 1876, i., 43; (LEA), 1878, A., 650; (RICHE), 1879, A., 694; (ABNEY; EDER and PIZZIGHELLI), 1882, A., 2.

an instance of the stability of, in sunlight (FIELD), 1873, 845.

effect of heat on (RODWELL), 1881, A., 965.

reaction of, with copper sulphides, in presence of ammonia (RAMMELSBURG), 1881, T., 383.

action of, on phosphorus diiodide (GAUTIER), 1874, 542.

behaviour of, to concentrated sulphuric acid and solution of ferric chloride (SAUER), 1874, 335.

solubility of, in hydrochloric acid (RUYSSSEN and VARENNE), 1881, A., 880; 1882, A., 695.

solubility of, in water (COOKE), 1882, A., 427.

**Silver chloride** (*argentie chloride*), combination of, with mercuric iodide (LEA), 1874, 963.

compound of, with thiocarbamide (BAUMANN), 1875, 632.

battery, electric discharge of (DE LA RUE and MÜLLER), 1876, i., 334; 1880, A., 203; 1882, A., 258.

gelatin-plates, Wilde's, for diapositives (ANON.), 1882, A., 1142.

and subchloride blackened (v. BIBRA), 1875, 1161; 1876, i., 43.

examination of, by means of bis-muth sulphide (GOLDSCHMIDT), 1877, ii., 356.

separation of, from gold (LEIBIUS), 1873, 728.

See also Silver haloid salts.

chlorobromiodide, contraction of (RODWELL), 1881, A., 496.

chlorobromiodides, some, effects of heat on (RODWELL), 1881, A., 965.

iodide, crystalline form of (v. ZEPHAROVICH), 1881, A., 398.

action of light on (BECQUEREL), 1875, 30; (RODWELL), 1875, 532; (LEA), 1876, i., 28.

effect of heat on (RODWELL), 1875, 532; 1881, A., 965.

coefficients of expansion of a mixture of, and lead iodide (RODWELL), 1881, A., 495, 966; 1882, A., 570.

compound of, with calcium iodide (SIMPSON), 1880, A., 442.

blowpipe examination of, by means of bis-muth sulphide (GOLDSCHMIDT), 1877, ii., 356.

See also Silver haloid salts.

potassium polyiodide (JOHNSON), 1878, T., 184.

nitrate, action of, on benzylic iodide (VAN RENESSE), 1877, i., 310.

action of, on cane-sugar (BORODULIN), 1873, 46.

behaviour of cuprous sulphide to a solution of (SCHNEIDER), 1875, 133, 612.

and nitric acid, action of, on certain morphine and codeine derivatives (WRIGHT), 1873, 1087.

action of hydrogen on (RUSSELL), 1874, 3; (PELLET), 1874, 867; (BEKETOFF), 1875, 425; (LEEDS), 1877, i., 282.

action of sulphuryl chloride on (THORPE), 1882, T., 297.

action of, on hydroplatinic chloride (JÖRGENSEN), 1878, A., 200.

**Silver** nitrate, action of sodium sulphide on (VIDAU), 1876, i., 747.  
 action of uranous oxide on (ISAMBERT), 1875, 1161.  
 attempt to form double salts of, with other nitrates (RUSSELL and MASKELYNE), 1877, ii., 843.  
 ammoniacal solution, aldehyde reaction with (TOLLENS; SALKOWSKI), 1882, A., 1329.  
 nitrite formed from silver nitrate by the action of hydrogen (RUSSELL), 1874, 6.  
 action of allylic bromide on (SCHIFF), 1875, 51.  
 action of, on benzylic iodide (VAN RENESSE), 1877, i., 310.  
 hyponitrite (MENKE), 1878, T., 401; (ZORN), 1878, A., 12.  
 action of ethylic iodide on (ZORN), 1882, A., 926.  
 action of, on organic bodies (ZORN), 1879, A., 309.  
 argentous oxide (PILLITZ), 1882, A., 997.  
 oxide, action of, on the ether of *di*-chloropropionic acid from pyruvic acid (KLIMENKO), 1875, 353.  
 action of hydrogen peroxide on (BERTHELOT), 1880, A., 441.  
 oxidation of tartaric acid by, in ammoniacal solution (CLAUS), 1876, i., 65.  
 acetone and bromine, volatile fatty acids produced by bringing together (LINNEMANN), 1874, 1156.  
*peroxide*, preparation of (BÖTTGER), 1874, 1135.  
 action of ammonia on (BÖTTGER), 1874, 229.  
*sesquioxide* (BERTHELOT), 1880, A., 441, 442.  
 phosphide (EMMERLING), 1879, A., 508.  
 plumbite (KRUTWIG), 1882, A., 1134.  
 silicofluoride (KERN), 1876, i., 881.  
 stannate, and *metastannate* (DITTE), 1882, A., 808.  
 sulphate (KRUTWIG), 1881, A., 354.  
 sulphide from Andreasberg (STRENG), 1879, A., 440, 898.  
 electric and chemical behaviour of (SKER), 1876, ii., 605.  
 action of cupric and cuprous chlorides on (RAMMELSBERG), 1881, T., 376.  
 action of selenium on (POTILIZIN), 1879, A., 771.  
 iron sulphide from Andreasberg (STRENG), 1879, A., 440, 898.

**Silver** sulphite (KERN), 1876, i., 881.  
 palladium thiopalladate (SCHNEIDER), 1873, 1197.  
 telluride. See *Hessite*.  
 vanadate (CARNELLEY), 1873, 338.  
**Silver organic compounds**:—  
 acetylide and its hydrate (BERTHELOT), 1875, 745.  
 cyanide, action of, on bromethylenic dibromide (ORLOWSKI), 1877, ii., 869.  
 decomposition of (MAUMENÉ), 1881, A., 794.  
 thallium cyanide (FRONMÜLLER), 1878, A., 394.  
 ammonium thiocyanate (FLEISCHER), 1876, i., 910.  
 perthiocyanate (ATRINSON), 1880, T., 226.  
**Silver ores**, newly-discovered deposit of, in the Troitzker district of the Government of Orenburg (v. BECK), 1876, ii., 49.  
 amalgamation of (RAMMELSBERG), 1881, T., 374.  
 light- and dark-red, action of copper chlorides on (RAMMELSBERG), 1881, T., 379.  
 reduction of, by hydrogen in the wet way (LAUR), 1882, A., 1246.  
 pyritous (WEISBACH), 1878, A., 380.  
 sulphuretted, decomposition of, by iron and mercury (RAMMELSBERG), 1881, T., 384.  
 brittle. See *Stephanite*.  
 See also *Pyrargyrite* and *Proustite*.  
**Silver bismuth-glance** (RAMMELSBERG), 1878, A., 476.  
**Silver, detection and estimation**:—  
 assay, use of Hempel's lamp for illustrating, as a lecture experiment (BRONNER), 1879, A., 402.  
 comparison of the American dry assay of, with the wet assay (RICHTER and HÜBNER), 1874, 1009.  
 blowpipe assay of lead (LYTE), 1880, A., 585.  
 precipitation of, by copper (TRIBE), 1873, 1007.  
 estimation of (VOLHARD), 1874, 919; 1878, A., 743; (HERTZ), 1879, A., 973; (FRESENIUS and BERGMANN), 1880, A., 747.  
 estimation of, by quartation with cadmium (KRAUS), 1880, A., 679.  
 estimation of, in galena (BALLING), 1880, A., 748.  
 estimation of, in galvanic silver-baths (MARECK), 1881, A., 468.



- Silver, estimation:—**  
 estimation of, in lead ores (KRUTWIG), 1882, A., 1134.  
 estimation of, in minium (BLUNT), 1875, 1291.  
 cupelled, estimation of silver and gold in (LINDEMANN), 1878, A., 530.
- Silver and zinc couple** (GLADSTONE and TRIBE), 1879, T., 574.
- Silver emetic.** See Tartaric acid, silver antimony salt of.
- Silver plate** for verifying the composition of the coinage (ROBERTS-AUSTEN), 1874, 200.
- Silver plating** (ROSELEUR), 1878, A., 538.
- Silver ultramarine.** See Ultramarine.
- Silvering of glass** (SIEMENS), 1873, 419; (BENRATH), 1882, A., 127.  
 application of glycerol to (PALMIERI), 1882, A., 1256.
- Sinalbin**, and its thiocarbamide (WILL and LAUBENHEIMER), 1880, A., 265.
- Sinapine** and its salts (WILL and LAUBENHEIMER), 1880, A., 265.
- Sinistrin**, a new carbohydrate from the squill (*Urginea Scilla*) (SCHMIEDERBERG), 1879, A., 779.
- Siphon**, a new (SEDLACZEK), 1873, 835.  
 with constant flow (NORBLAD), 1874, 765.
- Sipyllite**, a new niobate from Amherst Co., Virginia (MALLER), 1878, A., 384.
- Sismondine** (TSCHERMAK and SIPÖCZ), 1881, A., 234.
- Size** containing tannic acid, use of, for fixing aniline colours (ANON.), 1873, 1276.  
 estimation of, in textile fabric (RÉMONT), 1881, A., 1178.
- Sizing paper** (WURSTER), 1878, A., 184, 626; (LUNGE), 1879, A., 994.
- Skatole.** See 3'-Methylindole.
- Skim and separated milk.** See Milk under Agricultural Chemistry.
- Skin**, quantity of carbonic acid excreted by the human (AUBERT), 1873, 396.
- Slag** from iron furnaces, chemical composition of (ANON.), 1875, 913; (KENT), 1876, i., 969.  
 composition of a remarkable (SANTOS), 1878, A., 1019.  
 of a fine blue colour from Barrow Iron Works, Lancashire, composition of (FREY), 1874, 340.  
 phosphorescent (ANON.), 1882, A., 345.
- Slag**, crystallised, isomorphous with olivine (ARNOLD), 1881, A., 1016.  
 decomposition of (ILES), 1881, A., 615.  
 various uses for (EGLESTON), 1873, 656.  
 manufacture of aluminium sulphate, gelatinous silica and calcium chloride from (AMENC, CRIANDI, FABRE and MILIUS), 1877, ii., 239.  
 use of, for the preparation of building materials for special purposes (ANON.), 1874, 400.  
 basic (*Thomas slag*), composition of (WITZ), 1882, A., 1151.  
 as manure (MÄCKER), 1882, A., 1229.  
 analysis of (KERN), 1877, ii., 356.  
 estimation of manganese in (PATINSON), 1879, T., 372.  
 estimation of phosphorus in (MÜLLER), 1881, A., 939.  
 estimation of, in manufactured iron (BETTEL), 1881, A., 648.
- Slag, Thomas.** See Slag, basic.
- Slate**, composition of (MAUMENÉ), 1879, A., 1024.  
 aluminous, and granite block of Barr-Audlau, chemical examination of the contact zones of (UNGER), 1877, ii., 413.
- Slates**, Thuringian (BISCHOFF), 1874, 781.  
 chemical investigation of Thuringian, in the neighbourhood of Lehesten in the Gräfenenthal (MÄDER), 1874, 196.
- Smaltite** (*smaltine*), crystalline form and thermoelectric properties of (GROTH), 1875, 548.  
 from Bieber in Hesse (v. SANDBERGER), 1874, 552.
- Smee's element** and galvanic polarisation (HALLOCK), 1882, A., 1155.
- Smilacin.** See Parillin.
- Smilax glycyphylla*, sweet principle of (WRIGHT and RENNIE), 1881, T., 237.
- Smithsonite**, composition of (HILGER), 1880, A., 857.  
 from South-Western Virginia and East Tennessee, examination of, for indium (TANNER), 1874, 1144.
- Smoke** under the microscope (BODASZEWSKY), 1881, A., 505.  
 of an electric lamp (PROCTOR), 1880, A., 81.  
 influence of, on the health of domestic animals (FREYTAG), 1873, 1155.

- Smoke**, influence of, on vegetation (FREYTAG), 1873, 1155; 1882, A., 1333; (V. SCHROEDER), 1874, 492; 1880, A., 496; (KÖNIG), 1880, A., 497; 1882, A., 331.  
influence of, on the development of blossoms (DE CANTO), 1880, A., 177.  
See also Furnace gases.
- Snow**, foreign bodies in (BOUDIER), 1877, i., 288.  
and hydrochloric acid, freezing of mercury with (WITZ), 1876, i., 867.  
and sulphuric acid, freezing-mixture of (WITZ; PFAUNDLER), 1876, i., 867.
- Soap** and washing (FRICKE), 1874, 397.  
alumina, as a lake (ANON.), 1873, 960.  
ammoniacal (ANON.), 1874, 400.  
oleic (ANON.), 1882, A., 1016.  
resin-oil, preparation of (ANON.), 1873, 305.  
soft, preparation of (ANON.), 1882, A., 905.  
transparent, detection of alcohol in (JAY), 1881, A., 314.  
white barrel (ANON.), 1876, ii., 236.  
preparation of (ANON.), 1881, A., 858.  
so-called flux of (ANON.), 1882, A., 784.  
and alkaline resins, abnormal solubility of certain substances in (LIVACHE), 1879, A., 99.  
used in the textile industries (VOHL), 1874, 499.  
analysis of (JEAN), 1873, 195; (SENIER), 1875, 1055, 1296; (ANON.), 1877, i., 755.  
separation of, from fats (WOLFF), 1880, A., 587.
- Soap-bubbles**, diffusion of gases into (MULLER), 1875, 231, 1157.
- Soap-lyes**, spent, recovering glycerol from (FLEMING), 1882, A., 782.
- Soap-water**, recovery of potash, soda, etc., from (TESSIÉ DU MOTAY), 1873, 415.
- Socaloin** (TILDEN), 1875, 1270.
- Soda**. See Sodium hydroxide.
- Soda industry** (BEILSTEIN), 1874, 824; (WELDON), 1878, A., 534; (LUNGE), 1879, A., 677, 751; (ANON.), 1881, A., 321, 764; 1882, A., 342.  
improvements in the (BRUNNER; MACTEAR), 1879, A., 422.  
test-methods in the (LUNGE), 1882, A., 773, 895.  
formation of cyanogen compounds in the (LUNGE), 1879, A., 751.
- Soda industry**, direct preparation of soda from the chloride in the (BOHLIG), 1877, ii., 945.  
preparation of soda from sodium sulphide in the (TESSIÉ DU MOTAY), 1873, 414.
- Soda-ammonia process** (WAGNER), 1874, 194; (BAUER), 1874, 717; (BEILSTEIN; GÜNSBERG), 1874, 824; (LIST), 1875, 195.  
use of, in working up gas liquors (GERLACH), 1877, ii., 236.  
in conjunction with the manufacture of gas (ANON.), 1879, A., 837.
- Pechiney's black ash process** (LUNGE), 1879, A., 751.
- Leblanc's process**, temperature required in, and composition of the gases evolved (FISCHER), 1877, i., 236.  
causes of the loss of sodium in the manufacture of soda by (SCHEURER-KESTNER), 1873, 196.
- Soda-lime**, action of heated, on sodium hemipitate and opianate (BECKETT and WRIGHT), 1876, i., 283.
- Soda-liquors**, oxidation of (JURISCH), 1881, A., 765.
- Sodalite** from Tiahuanaco (BAMBERGER and FEUSSNER), 1882, A., 285.  
blue (FISCHER), 1881, A., 990.
- Soda-lyes**, purification of, with zinc (JURISCH), 1882, A., 903.  
crude, mode of desulphurising, obtained in the Leblanc process (ANON.), 1880, A., 592.  
estimation of cyanogen in (HURTER), 1879, A., 402.  
estimation of total sulphur and potassium ferrocyanide in (LUNGE), 1882, A., 895.
- Soda-mica** (GROTH), 1875, 542.
- Soda-micas** (RAMMELSBERG), 1880, A., 224; 1881, A., 533.
- Soda-solution**, standard (ENDEMANN and PROCHAZKA), 1880, A., 924.
- Soda-waste**, composition of the liquors obtained by the oxidation and lixiviation of, in the recovery of sulphur therefrom (STAHL-SCHMIDT), 1873, 197.  
decomposition of, for the production of sulphur (KRAUSHAAR), 1878, A., 171.  
decomposition of sulphur-lyes from, by hydrochloric acid (LUNGE), 1878, A., 755.  
use of, in the manufacture of glass (LUNGE), 1876, i., 787.

**Sodium** in plants, presence of (CONTE-JEAN), 1878, A., 681.

spectrum of (ROSCOE and SCHUSTER), 1874, 942; (ABNEY), 1881, A., 862, 957.

spectrum of, in Geissler's tubes (SALET), 1876, i., 863.

vapour density of (MEYER), 1880, A., 434.

specific volume of, at its boiling point (RAMSAY), 1881, T., 49.

comparison of the combining energies of the halogens and of, with different organic residues (WISLICENUS), 1882, A., 934.

some reactions of metallic, with chloroform (KERN), 1875, 746.

action of, on chlorinated nitro-compounds (v. HOFMANN and GEYGER), 1873, 168.

action of, on chloretylenic chloride (BRUNNER and BRANDENBERG), 1878, A., 211.

action of, on citric acid (CLAUS), 1875, 750.

action of, on sodium hydroxide (BEKETOFF), 1879, A., 689.

analysis of a residue from the manufacture of (GUYARD), 1876, ii., 123.

flame, means of rendering, absolutely monochromatic (LAURENT), 1874, 528.

monochromatic light, use of, to distinguish the changes of colour in alkalimetry (D'HENRY), 1873, 935.

**Sodium alloy** with bismuth (MÉHUR), 1874, 131, 1024.

with mercury. See under Mercury.

**Sodium salts**, absorption of carbon dioxide by (SETSCHENOFF), 1875, 864, 1159.

decomposition of, by cupric hydroxide (TOMMASI), 1881, A., 978.

solubility of mixtures of salts of potassium, magnesium and (PRECHT and WITTJEN), 1882, A., 1264.

**Sodium alum** of Japan (DIVERS), 1882, A., 20.

and potassium alum, mutual relations of, in aqueous solution (VENABLE), 1880, A., 53.

**Sodium aluminate** (PRESCOTT), 1880, A., 849.

use of, in calico-printing (KIELMEYER), 1873, 1271.

silicon aluminate, dialysis of (LE CHATELIER), 1874, 871.

arsenate (FLEURY), 1876, i., 45; 1881, A., 141.

biborate (*borax*) octahedral (ARZ-RUNI), 1877, ii., 112.

**Sodium biborate** (*borax*), physiological action of (DE CYON; LE BON), 1880, A., 415; (WOLBERG), 1881, A., 834.

influence of, on the decomposition of albumin in the organism (GRUBER), 1880, A., 907.

influence of, on the decomposition of proteids (GRUBER), 1881, A., 453.

influence of, on fermentation and putrefaction (SCHNETZLER), 1875, 1286; 1876, i., 104, 990; (BEDOIN), 1876, ii., 543; (DE CYON; LE BON), 1880, A., 415.

bromide, preparation of (CHIAPPE and MALESCI), 1877, i., 277.

action of chlorine and oxygen on (POTILIZIN), 1879, A., 770.

hypobromite, estimation of urea by means of. See under Urea.

carbonate, preparation of pure (SMITH), 1875, 337.

production of, by the action of magnesium carbonate on sodium chloride (CLOEZ), 1878, A., 770.

electrolysis of (FAVRE and ROCHE), 1874, 861.

action of metallic aluminium on, at a high temperature (MALLET), 1876, ii., 349.

action of, on barium, lead and strontium oxalates (SMITH), 1877, ii., 249.

action of, on calcium carbonate (SMITH), 1877, ii., 246.

action of chromium and of manganese on (CHAPMAN), 1877, i., 489.

action of silica, and some analogous oxides on, at high temperatures (MALLARD), 1873, 135, 243.

influence of the continued use of, on the composition of the blood (DUBELIER), 1881, A., 1161.

dihydrated (THOMSEN), 1879, A., 194.

hydrogen carbonate (*sodium bicarbonate*), electrolysis of (FAVRE and ROCHE), 1874, 861.

solubility and dissociation of (DIBBITS), 1875, 421.

dissociation of, at 100° (URBAIN), 1876, ii., 603; 1877, i., 439.

decomposition of moist and dry, by heat and reduced pressure (GAUTIER), 1876, ii., 602.

impurities in (KOSTER), 1881, A., 138.

chlorate, growth of crystals of, in presence of another salt (v. FOURLON), 1882, A., 574.

- Sodium chlorate**, etched figures on (BAUMHAUER), 1877, ii., 116.  
**chloride** (*common salt*) from Bellary (NICHOLSON), 1873, 151.  
 manufacture (PATERA), 1873, 413.  
 heat of formation and solution of (THOMSEN), 1876, i., 29.  
 decomposition of, by superheated steam (CABOT), 1875, 1161.  
 action of, on molten copper of various degrees of dryness (MONGER), 1882, A., 669.  
 and potassium chloride, solubility of a mixture of (SCHÖNACH), 1881, A., 223.  
 blue flame from (SMITH), 1879, A., 497.  
 conversion of, into sodium sulphate without the use of sulphuric acid (AXON.), 1874, 823.  
 combinations of, with ammonium chloride (CHEVREUL), 1877, ii., 839.  
 crystallised compound of water and (BEVAN), 1877, i., 440.  
 in beer (GATEHOUSE), 1877, ii., 940.  
 its importance in the animal organism (BUNGE), 1873, 1042.  
 relation of, to certain animal fermentation processes (SCHMIDT), 1877, i., 101.  
 and potassium bromide, double decomposition of, in the animal organism (BILL), 1877, i., 731.  
 separation of, from ammonium chloride (GERLACH), 1877, ii., 238.  
 See also Rock-salt.  
**iridium chloride**, crystalline form of (v. LASAULX), 1875, 613.  
**palladium chloride**, adulteration of, with sodium chloride (GAWALOWSKI), 1877, ii., 225.  
**rhodium chloride**, crystalline form of (v. LASAULX), 1875, 613.  
**fluoride**, specific gravity of (CLARKE), 1877, ii., 839.  
**beryllium fluoride** (MARGNAC), 1874, 24.  
**hydride**, formation of (TROOST and HAUTEFEUILLE), 1874, 767.  
**hydroxide** (*caustic soda*) (GRÜNEBERG and VORSTER), 1876, ii., 670.  
 new process in the preparation of (HELBIG), 1873, 414; (POLLACCI), 1873, 474.  
 preparation of, from sodium sulphate (BEVAN and CROSS), 1882, A., 12.  
 preparation of, from the sulphate by means of lime and sulphur (GUTZKOW), 1880, A., 592.
- Sodium hydroxide** (*caustic soda*), recovery of, from soap-water (TESSIÉ DU MOTAY), 1873, 415.  
 manufacture of (SIEBEL), 1875, 670; (LIEBER), 1875, 671.  
 manufacture of, from salt (GRÜNEBERG and VORSTER), 1876, ii., 670.  
 solutions, constitution of (BERTHELOT), 1873, 1098.  
 heat of formation of (BERTHELOT), 1873, 999, 1096.  
 heats of decomposition, formation and neutralisation of (THOMSEN), 1876, i., 29.  
 specific heats of solutions of (HAMMERL), 1880, A., 435.  
 nature of the insoluble form of, existing in the residue left on causticising sodium carbonate solutions with lime (SMITH and LIDDLE), 1881, A., 508.  
 affinity of, for water (MÜLLER-ERZBACH), 1878, A., 471.  
 separation of, into portions of different strengths on passing from the solid to the fused state (GLEDINNING and EDGER), 1873, 949.  
 aqueous, action of aluminium on (MILLS), 1880, T., 456.  
 action of, on inactive fermentation amyl alcohol (BALBIANO), 1877, i., 449.  
 action of the vapour of, on red-hot iron (DEBRAY), 1879, A., 887.  
 action of sodium on (BEKETOFF), 1879, A., 689.  
 action of, on tyrosine (OST), 1876, i., 577.  
 compound of, with coumarin (WILLIAMSON), 1875, 850.  
 compound of, with starch (TOLLENS), 1874, 245, 565; (PFEIFFER and TOLLENS), 1882, A., 490.  
 commercial, occurrence of arsenic and vanadium in (DONATH), 1881, A., 856.  
 presence of thiocyanates in commercial (NIETZKI), 1877, i., 353.  
 in potashes, direct estimation of (WITTSTEIN), 1877, ii., 510; (VAN HASSELT), 1880, A., 580.  
 estimation of, in presence of sodium carbonate in commercial soda (SIEGWART), 1874, 1007.  
 iodide, preparation of (CHIAPPE and MALESCI), 1877, i., 277.  
 action of lead peroxide on (DITTE), 1881, A., 976.



- Sodium** mercuric iodide (EDER and ULM), 1882, A., 806.  
 molybdate, decomposition of, by ammonium chloride (JEAN), 1874, 1138.  
 ammonium trimolybdate (MAURO), 1882, A., 468.  
 nitrate (*Chili saltpetre*), native (*caliche*) (MACHATTIE), 1875, 1166.  
   from South America (LANGBEIN), 1879, A., 1073.  
   industry in South America (OLIVIER), 1876, i., 446.  
 decomposition of, by alumina (LUNGE), 1882, A., 562.  
 decomposition of, by calcium carbonate (LUNGE), 1881, A., 322.  
 solubility of, and its combination with water (DITTE), 1874, 734.  
 analysis of, by means of Lunge's nitrometer (LUNGE), 1882, A., 774.  
   See also under Agricultural Chemistry.  
 nitrite, action of, on blood (GIACOSA), 1879, A., 817.  
 hyponitrite, and its reactions with some of the metals (MENKE), 1878, T., 404.  
 monoxide, heat of hydration of, and action of hydrogen on (BEKETOFF), 1879, A., 689.  
   combination of, with carbonic anhydride (BEKETOFF), 1881, A., 348.  
 zinc oxide (PRESCOTT), 1880, A., 852.  
 dioxide (FAIRLEY), 1877, i., 125.  
 phosphate, action of ammonia on (DUNN), 1877, ii., 703.  
   action of, on insoluble carbonates (FRÉBAULT and DESTREM), 1878, A., 113.  
 disodium orthophosphate, amount of, in the serum of Herbivora (MRATSKOWSKY), 1878, A., 519.  
 trisodium orthophosphate, dissociation of (VAN BEMMELEN), 1880, A., 2.  
 ammonium hydrogen phosphate (*microcosmic salt*), crystallisation of supersaturated solutions of (THOMSON and BLOXAM), 1882, T., 384.  
 ferric pyrophosphate, anhydrous (JÖRGENSEN), 1878, A., 199.  
 lithium pyrophosphates (KRAUT, NAHNSEN and CUNO), 1876, ii., 603.  
 phosphide, action of haloid compounds of hydrocarbon radicles on (LETTIS and COLLIE), 1881, A., 722.  
 hypophosphite (RAMMELSBERG), 1873, 2.
- Sodium** hypophosphite, preparation of (BOYMOND), 1880, A., 367.  
 platinochloride, solubility of, in alcohol (PRECHT), 1880, A., 578.  
 platinosobromide (THOMSEN), 1877, ii., 277.  
 silicate (MASSIE), 1876, i., 120.  
   action of oxalic acid on (MONIER), 1878, A., 198.  
   antiseptic properties and physiological action of (RABUTEAU and PAPILLON), 1873, 85, 400; (PICOT), 1873, 294.  
 aluminium silicates, formed by the action of sodium carbonate on kaolin (SILBER), 1881, A., 684.  
 silicofluoride (STOLBA), 1873, 406.  
 silicotitanates, two (HAUTEFEUILLE), 1880, A., 531.  
 sulphate (*Glauber's salt*), native, from Sicily, composition of (PATERNO), 1881, A., 524.  
   efflorescence of, at Klausenburg (KOCH), 1878, A., 943.  
   existence of two isomeric modifications of anhydrous (DE COPPET), 1874, 337, 773.  
   monohydrated (THOMSEN), 1879, A., 194.  
   formation of, from sodium chloride without the use of sulphuric acid (ANON.), 1874, 823.  
   anhydrous, preparation of, from Glauber's salt (PECHINEY), 1879, A., 596.  
   manufacture of, by the direct process (HARGREAVES), 1881, A., 664.  
   anhydrous, heat developed by contact of water with (DE COPPET), 1879, A., 589.  
   chemical equivalent of (MILLS and WALTON), 1880, A., 437.  
   crystallisation of supersaturated solutions of (GERNEZ), 1874, 543.  
   condition of, in solution (GERNEZ), 1877, ii., 273.  
   action of alumina on (MILLS and MEANWELL), 1881, T., 534.  
   action of, on lead iodide (MICHAELIS and KOETHE), 1874, 26.  
   action of silica on (MILLS and MEANWELL), 1881, T., 533.  
   the part played by carbon in reducing (MACTEAR), 1878, T., 475.  
   decomposition of, by calcium hydrogen carbonate (LUNGE), 1882, A., 562.  
   decomposition of, by lime, and by barium carbonate and caustic lime (LUNGE), 1881, A., 322.

**Sodium sulphate** (*Glauber's salt*), conversion of, into sodium hydroxide (BEVAN and CROSS), 1882, A., 12.  
 in soda used for glass-making (BENRATH), 1873, 540.  
 determination of, in bitter salt (*magnesium sulphate*) adulterated therewith (ANTHON), 1876, ii., 326.  
 separation of, from ammonium sulphate (GERLACH), 1877, ii., 238.  
 See also Mirabilite and Thenardite.  
*quadrissulphate* (LESCOUR), 1874, 870.  
*beryllium sulphate* (ATTERBERG), 1873, 1003.  
*calcium sulphate*, crystallised (FOLKARD), 1881, A., 509.  
*ferrous sulphate* (MOHR), 1874, 962; (BILTZ), 1875, 44.  
*thallous sulphate* (SCHNEIDER), 1875, 533.  
*sulphides*, heats of formation and hydration of (SABATIER), 1879, A., 865; 1880, A., 690; 1881, A., 492.  
*sulphide*, formation of, by the action of hydrogen sulphide on sodium chloride at high temperatures (KINGZETT), 1873, 456.  
 crystallised (BAUDRIMONT), 1876, i., 39.  
 action of, on glycerol (SCHLAGDENHAUFFEN), 1873, 868.  
 action of, on silver nitrate (VIDAL), 1876, i., 747.  
 use of, in tanning (EITNER), 1876, i., 982.  
*ferrous sulphide*, nitroso-, so-called (PAWEL), 1880, A., 218.  
*indium sulphide* (SCHNEIDER), 1874, 871.  
*manganese sulphide* (SCHNEIDER), 1875, 43.  
*thallium sulphide* (SCHNEIDER), 1875, 533.  
*zinc sulphide* (SCHNEIDER), 1874, 228.  
*pentasulphide*, constitution and reactions of (JONES), 1880, T., 461.  
*polysulphides*, preparation of (JONES), 1880, T., 462.  
 heat of formation of, from their elements (SABATIER), 1880, A., 690.  
 methods of analysis of (JONES), 1880, T., 461.  
*hydrosulphide*, heat of formation and hydration of (SABATIER), 1879, A., 865.  
 and chalk, as a depilatory (BÜTTGER), 1873, 308; 1874, 728.

**Sodium sulphite**, action of, on ethylenic dichloride (BUNTE), 1874, 353.  
 as a means of removing chlorine after bleaching (SCHUCHARDT), 1874, 95, 718.  
*hydrogen sulphite*, action of heat on (BARBAGLIA and GUCCI), 1881, A., 224.  
*palladium sulphite* (WÖHLER), 1875, 134.  
*hyposulphite* (SCHÜTZENBERGER), 1881, A., 682; (BERNTSEN), 1881, A., 976.  
 composition of (BERNTSEN), 1881, A., 508; 1882, A., 465.  
 action of, on the hematin of blood (CAZENEUVE), 1877, ii., 346.  
 estimation of aniline dyes by means of (STAMM), 1873, 1263.  
 as a reagent in the analysis of the colouring matters of dyed stuffs (SUTRATI-MANZONI), 1877, i., 349.  
 use of, in the estimation of copper, of indigo, and of dissolved oxygen in water (BERNTSEN), 1881, A., 310.  
 titration of, with indigo carmine (BERNTSEN and DREWS), 1881, A., 310.  
*thiocarbonate*, manufacture of (VINCENT), 1881, A., 855.  
 estimation of carbon disulphide in (DELAGHANAL and MERMET), 1876, i., 108; (DAVID and ROMMIER), 1876, i., 109.  
*thiochromite* (GRÜGER), 1882, A., 15.  
*thiosulphate*, action of, on mercuric iodide (EDER and ULM), 1882, A., 806.  
 removal of, in photography (ANON.), 1876, i., 460.  
 as an antichlor (SCHUCHARDT), 1874, 718; (LUNGE), 1879, A., 676.  
 reaction of, with iodine (PICKERING), 1880, T., 128.  
 estimation of, by iodine (MOHR), 1874, 288.  
*thiotellurite* (WILLS), 1879, T., 705.  
*tungstates*, action of arsenic and phosphoric acids on (LEFORT), 1881, A., 1107.  
*tungstate*, action of organic acids on (LEFORT), 1876, ii., 278.  
 decomposition of, by ammonium chloride (JEAN), 1874, 1138.  
 reaction of, with blood, albumin, casein, serum and gum (SONNENSCHIEIN), 1874, 296.

**Sodium tungstoborates** (KLEIN), 1881, A., 24, 224, 879.  
 oxyfluorungstate (GIBBS), 1877, ii., 848.  
 uranate (ZIMMERMANN), 1881, A., 686.  
 peruranate (FAIRLEY), 1877, i., 136.  
 vanadate (CARNELLEY), 1873, 337.

**Sodium organic compounds:—**

borocitrates (SCHEIBE), 1881, A., 89.  
 cyanamide, action of ethylic chloroformate on (BÄSSLER), 1878, A., 214.  
 cyanide, and its hydrates (JOANNIS), 1882, A., 483.

action of benzoic chloride on (GERLICH), 1876, ii., 196.

gold cyanides (LINDBOM), 1878, A., 131.

ferrocyanide, preparation of (TANATAR), 1881, A., 143.

glyceride, action of carbonic oxide on (LOEBISCH and LOOSS), 1882, A., 377.

mercaptide, and its action on methylic iodide, methylenic iodide and chloroform (CLAËSSON), 1877, ii., 293.

dinitrodihydroxyquinone (GRUBER), 1879, A., 644.

**Sodium, estimation and separation:—**

estimation of (KRETSCHY), 1876, ii., 652; (KNOP), 1882, A., 1132.

separation of, from potassium (SCHLESING), 1877, ii., 921.

**Sodium felspar** of Pantellaria (FÖRSTNER), 1878, A., 388.

**Soil.** See under Agricultural Chemistry.

**Soja bean** (*Soja hispida*). See under Agricultural Chemistry.

**Solanidine and solanine.** See under Alkaloids.

*Solanum Dulcamara*, bitter constituents of (GEISSLER), 1876, i., 714.

*Solanum Lycopersicum*, solanine in (KENNEDY), 1873, 918.

**Solar chemistry**, recent researches on (LOCKYER), 1879, A., 425.

**Solar spectrum.** See Spectrum under Photochemistry.

**Solar system**, some points connected with the chemical constituents of the (GLADSTONE), 1878, A., 189.

**Solfataras**, lateral, of the Chili volcanoes and on some new minerals (DOMEYKO), 1874, 455.

**Solids**, molecular volume of (WILSON), 1882, A., 275.

volume-constitution of (SCHRÖDER), 1874, 760, 874; 1877, ii., 404, 698; 1878, A., 926; 1879, A., 768; 1881, A., 137; 1882, A., 356.

in solution, determination of the specific refraction of (BEDSON and WILLIAMS), 1882, A., 351.

**Solids**, action of electricity on (NEYRENEUR), 1875, 39.

mechanical and thermic expansion of (KURZ), 1874, 221, 767.

liquefaction and cold produced by the mutual action of (WALTON), 1882, A., 450.

diffusion of (COLSON), 1882, A., 357, 454.

absorption of gases by (HANNAY), 1881, A., 872, 971; 1882, A., 272.

solubility of, in gases (HANNAY and HOGARTH), 1880, A., 210, 693; 1881, A., 970; 1882, A., 271.

action of, in liberating gas from solutions (TOMLINSON), 1875, 330; 1876, i., 186.

welding of, induced by pressure (SPRING), 1881, A., 498; 1882, A., 273.

**Soluble blue** (ANON.), 1879, A., 418.

**Solubility.** See Solution.

**Solution**, researches on (BERTHELOT), 1874, 948.

and crystallisation, theory of (LECOQ DE BOISBAUDRAN), 1875, 1235.

suspension, and chemical combination (DURIAM), 1878, A., 636.

influence of temperature on the distribution of salts in (SORER), 1881, A., 5.

existence of double salts in (INGENHOES), 1880, A., 32.

**Solutions**, constitution of (KRÜSS), 1882, A., 1018.

saline, constitution of (BERTHELOT), 1873, 1096; (HARTLEY), 1874, 651.

molecular volume of (BERTHELOT), 1873, 715.

saline, molecular properties of refractive powers of (VALSON), 1873, 460.

electric conductivity of (LONG), 1881, A., 71.

dependence of the electric conductivity of, upon the amount of salt contained in them, and on their temperature (KOHLEAUSCH and GROTRIAN), 1875, 605.

aqueous, electric conductivity of acids in (KOHLEAUSCH), 1877, ii., 104.

electric conductivity of alkali and alkaline-earth chlorides in (KOHLEAUSCH and GROTRIAN), 1875, 605, 1149; 1876, i., 182.

aqueous, effects of electric currents on the surfaces of mutual contact of (GORE), 1881, A., 962; 1882, A., 260.

- Solutions**, aqueous, thermoelectric behaviour of, with platinum electrodes (GORE), 1881, A., 963.  
 saline, specific heats of (MAGRIGNAC), 1877, i., 31.  
 of various solid, liquid, and gaseous substances in water, thermochemical researches on (THOMSEN), 1873, 1101.  
 saline, rise of temperature occasioned by passing steam into, and the temperature of the vapours from (MÜLLER), 1877, i., 430; ii., 274.  
 vapour-pressure of (PAUCHON), 1880, A., 211.  
 vapour-pressure and solidifying point of (RAOULT), 1879, A., 4.  
 thermal constants of the substitution of potassium for other metals in (TOMMASI), 1882, A., 1257.  
 chemical equilibrium in (BERTHELOT and DE SAINT-MARTIN), 1873, 36; (BERTHELOT), 1873, 236, 468; 1875, 1155, 1236; 1879, A., 296; (MUIR), 1878, T., 27; 1879, T., 311; 1880, T., 424; (OSTWALD), 1878, A., 196; 1881, A., 497; (MUIR and SLATER), 1880, T., 60; (MENSCHUTKIN), 1882, A., 793.  
 force of crystalline dissociation in (FAVRE and VALSON), 1873, 31, 32, 129; 1874, 120, 650; 1875, 330.  
 saline, transpiration of (BERTHELOT), 1873, 468.  
 of hydrated salts, action of heat on (TICHBORNE), 1873, 34.  
 metallic, behaviour of, with filter-paper (BAYLEY), 1878, T., 304.  
 action of sulphur on (FILHO and SENDERENS), 1881, A., 1097.  
 of neutral compounds in benzene, congelation of (RAOULT), 1882, A., 1260.  
 saline, and attached water (GUTHRIE), 1875, 330, 530; 1876, i., 336; ii., 169; 1877, i., 36; 1879, A., 428.  
 action of, on metals (WAGNER), 1876, ii., 600.  
 saline, absorption of ammonia by (RAOULT), 1874, 224, 1058.  
 aqueous, dissociation of ammonium salts in (DIBBITS), 1873, 33; 1875, 608; 1876, i., 680.  
 saline, absorption of carbon dioxide by (SETSCHENOFF), 1874, 334; 1875, 864, 1159.  
 action of various, on copper (CARNELLEY), 1876, ii., 1.  
 solvent action of various, on lead (MUIR), 1877, i., 660, 690.  
 absorption of gases by (MACKENZIE), 1877, ii., 833.  
**Gases**, absorption of, by liquids (NACCARI and PAGLIANI), 1880, A., 525.  
 absorption of, by solids (HANNAY), 1881, A., 872, 971; 1882, A., 272.  
**Solvents**, influence of inactive, on the specific rotatory power of active substances (OUDEMANS), 1873, 461.  
**Solubility**, theory of (WALZ), 1875, 1157.  
 of gypsum in water and saline solutions (DROEZE), 1877, ii., 112.  
 of mixtures of salts of the alkalis and alkaline earths (PRECHT and WITTEN), 1881, A., 978; 1882, A., 1264.  
 of solids in gases (HANNAY and HOGARTH), 1880, A., 210, 693; 1881, A., 970; 1882, A., 271.  
 of organic acids in alcohol and ether (BOURGOIN), 1878, A., 721.  
 estimations (OUDEMANS), 1873, 410; (MEYER), 1876, i., 676.  
**Solutions**, saturated and unsaturated (HANDL), 1873, 470.  
 supersaturated (LIVERSIDGE), 1873, 469; (MICHAELIS), 1873, 470; (LECOQ DE BOISEAUDRAN), 1874, 1133; (PFAUNDLER), 1877, i., 435; (GRENFELL), 1877, i., 436; 1879, A., 501; (GERNEZ), 1877, ii., 696.  
 condition of (DE COPPET), 1874, 1132.  
 application of the principle of dissimilar molecules to the phenomena of (PFAUNDLER), 1877, i., 435.  
 causes of crystallisation in (DE COPPET), 1873, 172.  
 crystallisation of double salts from (THOMSON and BLOXAM), 1882, T., 379.  
 action of isomorphous salts in exciting the crystallisation of, of each other (THOMSON), 1879, T., 196.  
 with gases, action of solid bodies on (TOMLINSON), 1873, 590.  
 analogy between the decomposition of certain explosive bodies and the disengagement of gases from their (GERNEZ), 1875, 417.  
 supposed action of liquid films on (GERNEZ), 1873, 720.  
 action of oils on (TOMLINSON), 1873, 720; 1880, A., 438.  
 action of solid bodies on (HENRICI), 1873, 347.  
**Solution**. See also Liquids and Salts.  
**Sonomaite**, a new mineral (HAYDEN), 1878, A., 384.



- Sonorous vibration**, chemical stability of substances in (BERTHELOT), 1880, A., 437.
- Sophoretin and sophorin** (FÖRSTER), 1882, A., 976.
- Sophorine** (WOOD), 1878, A., 802.
- Sorbic acid** (KACHEL and FITTIG), 1874, 43; (FITTIG), 1876, i., 897; 1880, A., 377.  
structure of (MENSCHUTKIN), 1880, A., 382.  
*tetrabromide* (KACHEL and FITTIG), 1874, 43.
- Sorbinose and sorbitol**. See under Carbohydrates.
- Sordidin** (PATERNÒ), 1877, ii., 780.
- Sorghum**. See under Agricultural Chemistry.
- Sorghum sugar**. See Sucrose under Carbohydrates.
- Spa water**. See Mineral water under Water.
- Sparteine**, method of obtaining (KIRCHMANN), 1877, i., 716.
- Spathic iron**. See Chalybite.
- Spathiopyrite**. See Safflorite.
- Spear-heads**, copper, from Cyprus, composition of (FLIGHT), 1882, T., 143.
- Specific gravity apparatus** (PISANI), 1878, A., 364; (DUNNINGTON), 1880, A., 743.  
for temperatures other than atmospheric (HANNAY), 1874, 203.  
bottle for liquids spontaneously inflammable in contact with air (TRIBE), 1874, 16.  
tube-hydrometers (PILE), 1873, 131.
- Specific gravity determinations** (CHRISTOMANOS), 1877, ii., 697; (CLARKE), 1878, A., 365; 1879, A., 295, 1004; (TILDEN), 1879, A., 197; (PECKHAM), 1879, A., 498; (DITTMAR), 1881, A., 938.  
errors in (THORPE), 1880, T., 373.
- of aldehydes (HERMANN), 1878, A., 638.
- of the alloy of lead, tin, cadmium, and bismuth (*Wood's metal*) (KNECHT), 1880, A., 679.
- of certain alloys of silver and copper (ROBERTS-AUSTEN), 1875, 736.
- of ammonia solution (WACHSMUTH), 1876, ii., 477.
- of benzene (PISATI and PATERNÒ), 1874, 687.
- of bismuth peroxide (BRAUNER and WATTS), 1881, A., 220.
- of butter fat (BLYTH), 1880, A., 572.
- of *isobutylic isovalerate* (PIERRE and PUCHOT), 1873, 55, 1017.
- Specific gravity of carbon compounds** (HERMANN), 1876, ii., 496; 1878, A., 637, 697.  
of solid carbon compounds (HERMANN), 1876, ii., 496; 1879, A., 579; (SCHRÖDER), 1879, A., 610; 1880, A., 21, 694; 1881, A., 496, 969.  
in relation to constitution and refractive power (BRÜHL), 1880, A., 295, 781; 1881, A., 489.
- of the cerium metals (HERMANN), 1879, A., 579.
- of cholesterol (MÉHU), 1875, 247.
- of chloroform (REICHARDT), 1876, i., 363.
- of cork (ROLLMANN), 1873, 953.
- of cumene (PISATI and PATERNÒ), 1874, 687.
- of cymene (WRIGHT), 1873, 699.  
from various sources, determination of (PISATI and PATERNÒ), 1874, 686.
- of dihydroxydiphenylsulphone (ANNAHEIM), 1877, i., 79.
- of ethers derived from coumarins (PERKIN), 1881, T., 443.
- of ethylenic dibromide and dichloride and chloriodide (THORPE), 1880, T., 177, 371.
- atomic weight and hardness of the metallic elements, relation between (LEA), 1874, 964; (BOTTONI), 1875, 232.
- of ethylic *isovalerate* (PIERRE and PUCHOT), 1873, 1017.
- of fats at high temperatures (WIGNER), 1877, ii., 108.
- of fats, resins, etc. (HAGER), 1880, A., 70.
- of metallic fluorides (CLARKE), 1877, ii., 839.
- of formates (SCHRÖDER), 1881, A., 496.
- of gluten (DITTMAR), 1873, 283.
- of glycerol (LENZ), 1880, A., 757.
- of gunpowder (LUCK), 1874, 290.
- of *n*-heptane from *Pinus Sabina* (THORPE), 1879, T., 299; 1880, T., 214.
- of hydrocarbons of the ethylene series and some of their derivatives (HERMANN), 1878, A., 640.
- of aqueous hydrochloric acid (THOMSEN), 1874, 955.
- of hydrogen combined with metals (TROOST and HAUTEFEUILLE), 1874, 768.
- of liquid oxygen, hydrogen and nitrogen, in presence of inert liquids (CAILLETET and HAUTEFEUILLE), 1881, A., 874.

- Specific gravity** of solutions of iodic and periodic acids (THOMSEN), 1874, 433.
- of iodine chloride (THORPE), 1880, T., 176.
- of iodine trichloride (CHRISTOMANOS), 1877, ii., 697.
- of pure iridium and platinum and of their alloys (SAINTE-CLAIRE DEVILLE and DEBRAY), 1876, i., 523.
- of white pig-iron (v. KÖPPEN), 1879, A., 840.
- of Bessemer steel containing varying amounts of carbon (KOPPMAYER), 1874, 831.
- of the vapours of the chlorides of lead and thallium (ROSCOE), 1878, A., 937.
- of legumin (DITTMAR), 1873, 283.
- of leucine (ENGEL and VILMAIN), 1876, i., 907.
- of a liquid at its boiling point, method of estimating (SCHIFF), 1882, A., 893.
- of liquids (SPRENGEL), 1873, 577; (THORPE), 1880, T., 141, 327; (SIEBOLD), 1880, A., 61; (SOMMERKORN), 1880, A., 419, 743; (DUNNINGTON), 1880, A., 743.
- of lithium oxide (BRAUNER and WATTS), 1881, A., 220.
- of solid mercury (MALLET), 1878, A., 273.
- of liquid methylic chloride (VINCENT and DELACHANAL), 1879, A., 294.
- of three methylquinolines (SKRAUP), 1882, A., 1217.
- of nicotine and of its aqueous solutions (SKALWEIT), 1882, A., 216.
- of nitroglycerol (HERMANN), 1878, A., 699.
- of pure platinum (SAINTE-CLAIRE DEVILLE and DEBRAY), 1876, i., 523.
- potatoes (FRESENIUS), 1881, A., 932.
- relation between the quantity of starch contained in potatoes and their relative (HEIDEPRIEM), 1877, ii., 233.
- of powdered substances (RÜDORFF), 1879, A., 669.
- of selenious acid and oxide (CLAUSNIZER), 1879, A., 691.
- and molecular weights of substances, relation between, when in the liquid state (THORPE), 1880, T., 141, 327.
- of certain metallic sulphates (THORPE and WATTS), 1880, T., 103.
- Specific gravity** of a mixture of sulphuric acid and water (KOHLE-RAUSCH), 1878, A., 704.
- of uranium trioxide (BRAUNER and WATTS), 1881, A., 220.
- of isovaleric acid and its ethers (PIERRE and PUCHOT), 1873, 55, 1017.
- of water (PIARRON DE MONDÉSIR), 1874, 220; (v. HOFMANN), 1874, 765.
- of sea-water taken by the "Travailleur" in 1881 (BOUQUET DE LA GRYE), 1882, A., 798.
- of wax, ceresin, etc. (DIETERICH), 1882, A., 1139.
- See also Density and Vapour-density.
- Specific heat.** See under Thermochemistry.
- Specific inductive capacity.** See under Electrochemistry.
- Specific rotation.** See Rotation under Photochemistry.
- Specific volume.** See Volume, specific.
- Spectrum and spectroscope.** See under Photochemistry.
- Specula**, glass, electrodeposition of metals on (WRIGHT), 1878, A., 251.
- Specular iron ore.** See Iron ores under Iron.
- Speiskobalt.** See Cobalt speiss.
- Speiss**, composition of (FRESENIUS), 1873, 1261.
- Spergulin**, a new fluorescent compound (HARZ), 1879, A., 469.
- Spessartite** (*manganese garnet*) (PISANI), 1876, ii., 610; (HEDDLE), 1880, A., 856.
- Sphærostilbite** from Nova Scotia (HOW), 1876, ii., 55.
- Sphene** (*titanite*; *tilanomorphite*), a new calcium titanate (v. LASAULX), 1881, A., 371.
- from the Eisbrückalp, Tyrol (HESSENBERG), 1873, 1011.
- Spherulites** in eruptive rocks (MICHEL-LÉVY), 1882, A., 705.
- Sphingosine** (THUDICHUM), 1882, A., 537.
- Spiauterite.** See Wurtzite.
- Spices**, adulteration of (HILGER), 1876, ii., 330.
- Spice seeds**, certain, composition of the ash of (EDZARDI), 1880, A., 915.
- Spiegeleisen.** See under Iron.
- Spigeline**, a new volatile alkaloid (DUDLEY), 1881, A., 1153.
- Spike**, essence of (BRUYLANTS), 1880, A., 50.
- Spinel** (DOELTER), 1878, A., 391.

- Spinel** in dolerite, from Ovifak (SMITH), 1879, A., 894.  
 of Tiriolo in Calabria (MAURO), 1879, A., 694.  
 artificial production of (AUMANN), 1878, A., 933; (MEUNIER), 1880, A., 447.  
 volume constitution of (SCHRÖDER), 1874, 875; 1878, A., 927.  
 oriental, polysynthetical twin-crystals of (STRÜVER), 1880, A., 14.  
 pseudomorph of, after corundum (GENTH), 1874, 549.  
 black, in the greenstones of Elba (CORSI), 1882, A., 480.  
 red and blue, composition of (JANOVSKY), 1880, A., 369.
- Spirea Ulmaria**, essential oil of the root of (NIETZKI), 1874, 897.
- Spirits**, action of low temperatures on (MEISENS), 1873, 1173.  
 freezing of (MEISENS), 1875, 489.  
 examination of water distilled from (NESSLER), 1882, A., 347.  
 examination of whiskey and other, for methylated spirit and fusel oil (DUPRÉ), 1876, ii., 215.  
 See also Brandy, Ethylic alcohol and Potato spirit.
- Spirituous liquors**, nitrobenzene in (DEBRUNNER), 1878, A., 542.
- Spleen-fungus**, artificial generation of (BUCHNER), 1881, A., 59.
- Splenic fever**, origin and prevention of (PASTEUR), 1882, A., 323; (FESER), 1882, A., 543.
- Spodumene (triphane)** (DOELTER), 1881, A., 694.  
 from Brazil (PISANI), 1877, ii., 850.  
 and its alterations, from the granite-veins of Hampshire County, Massachusetts (JULIEN), 1881, A., 1005.  
 from North Carolina (SMITH), 1882, A., 151.
- Springs and spring water**. See under Water.
- Squill (*Urginea Scilla*)** a new carbohydrate (*sinistrin*) from the (SCHMIEDERBERG), 1879, A., 779.
- Stag's horn**, constitution of (BLEUNARD), 1880, A., 271.
- Stalagmitic formations** of the Solfatara of Puzzuoli (DE LUCA), 1873, 478.
- Standard weights and measures**, material for (MOHR), 1879, A., 102.
- Stannous and stannic compounds**. See under Tin.
- Stantienite** (PIESZCZEK), 1881, A., 687.
- Star anise (*Illicium religiosum*)**, fruit and seeds of the (EIJKMAN), 1881, A., 918.
- Starch**. See under Carbohydrates.
- Starchmakers' residues**, composition of (HOLDEFLEISS), 1880, A., 595.
- Stars**, photographic spectra of (HUGGINS), 1881, A., 485, 956; 1882, A., 250.
- Staurolite (staurolite)** (v. LASAULX), 1873, 854.  
 from Fannin, Georgia (DANA), 1877, i., 582.  
 from the Urals (v. KOKSCHAROFF), 1876, i., 887.  
 hemihedral forms of (SHEPARD), 1881, A., 382.
- Steam**, superheated (RAMDOHR), 1879, A., 838.  
 temperature of (PFAUNDLER), 1876, ii., 39.  
 formed under normal conditions (MÜLLER), 1877, ii., 274.  
 rise of temperature occasioned by passing, into saline solutions, and on the temperature of the vapours from saline solutions (MÜLLER), 1877, i., 430.  
 decompositions of, by red-hot iron or magnesium in a glass tube, a lecture experiment (ROSENFELD), 1882, A., 690.  
 action of, on red-hot charcoal (LONG), 1878, A., 961.  
 and air, condensation of a mixture of, on cold surfaces (REYNOLDS), 1873, 1001.  
 See also Ice and Water.
- Steam boilers**. See Boilers.
- Stearamide** (KRAFFT and STAUFFER), 1882, A., 1274.
- Stearic acid (*hexadecylacetic acid*)**, presence of, in rye grain (RITTHAUSEN), 1878, A., 239.  
 conversion of ricinoleic acid into (CLAUS), 1877, ii., 314.  
 production of, from fats (CARPENTER), 1873, 658.  
 preparation of (GUTHZEIT), 1881, A., 408.  
 manufacture, improvement in the (DEISS), 1874, 1119.  
 decomposition of, by distillation under pressure (JOHNSTON), 1876, i., 8.  
 and oleic acid, method of separating and determining (DAVID), 1878, A., 1011.  
 nitro- (CHAMPION and PELLET), 1877, i., 590.
- isoStearic acid (*dioctylacetic acid*)**, and its salts (CONRAD and BISCHOFF), 1880, A., 628; (GUTHZEIT), 1880, A., 872.
- Stearic aldehyde**, preparation of (KRAFFT), 1880, A., 867.

- Stearin**, new process in the manufacture of (BOCK), 1873, 1173.
- Stearoheptadecylcarbamide** (v. HOFMANN), 1882, A., 1053.
- Stearolic acid**, oxidation-products of (LIMPACH), 1878, A., 403.
- Stearonitrile** (KRAFFT and STAUFFER), 1882, A., 1274.
- Stearopten** in the flowers of *Clandestina rectiflora* (v. HARTSEN), 1873, 513.
- Stearoxylic acid** (LIMPACH), 1878, A., 403.
- Steatargillite** (SCHMID), 1882, A., 582.
- Steatite** (*saponite*) (CHURCH), 1875, 736.
- Steel**. See under Iron.
- Stecarobic acid** (ANON.), 1882, A., 764.
- Stephanite** (*brittle silver ore*) (FRENZEL), 1874, 446.  
from Příbram (VRBA), 1882, A., 574.
- Sterculia acuminata* (*kolu nuts*), composition of (HECKEL and SCHLAGDENHAUFFEN), 1882, A., 1125.
- Stereocaulon Vesarianum*, chemical constituents of (PATERNO), 1880, A., 551; (COPPOLA), 1882, A., 866.  
composition of the ash of, and crystalline substance from (COPPOLA), 1880, A., 382.
- Stibine** (JONES), 1876, i., 641.
- Stibnite** (*antimonite*) in Bornco (FRENZEL), 1878, A., 708.  
unusual form of (SANTOS), 1877, ii., 854.  
crystallography of (SEIGMANN), 1881, A., 397.  
evolution of antimony from, by nascent hydrogen (SKEY), 1877, i., 174.  
See also Antimony trisulphide.
- Stilbene** (*s-diphenylethylene*; *toluylene*) (KLINGER), 1878, A., 132; (ANSCHÜTZ), 1878, A., 984.  
formation of (RADZISZEWSKI), 1873, 889.  
and some of its derivatives, new formation of (MICHAEL), 1881, A., 1150.  
formation of, from dibenzyl (BARBIER), 1877, i., 74.  
and the accompanying bye-products, preparation of (FORST), 1876, i., 393.  
crystalline form of (VOM RATH), 1873, 383.  
action of nitric acid on (LORENZ and BLUMENTHAL), 1876, i., 242.  
colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.  
compounds of (ZINCKE), 1880, A., 114.
- Stilbene**, *mono-* and *di-amido-*, *p-di-nitro-* and *p-nitramido-* (STRAKOSCH), 1873, 890.  
*dicyano-*, and its reduction (REIMER), 1881, A., 48.
- Stilbene alcohols**. See Hydrobenzoin.
- Stilbene bromide**, hydrobenzoin from (FORST and ZINCKE), 1875, 453; 1876, ii., 634; (ZINCKE), 1876, ii., 634.
- Stilbene chlorides**. See Hydrobenzoin dichlorides.
- Stilbenedicarboxylic acid** (*diphenyl-maleic acid*) (RÜGHEIMER), 1882, A., 1298.
- Stilbenedicarboxylic anhydride**, and its dinitro-compound (REIMER), 1881, A., 47; 1882, A., 170; (RÜGHEIMER), 1882, A., 1299.
- Stilbite** (*desnaine*; *foresite*) (KÖNIG), 1879, A., 606; (v. LASAULX), 1880, A., 856.  
a new mineral of the zeolite family, from the granite veins of Elba (VOM RATH), 1874, 1066.  
from the Faröe Islands, composition of a crystal of (HEDDLE), 1878, A., 278.  
from the Seisser-Alp in the Tyrol (PETERSEN), 1874, 1074.  
from the Miage Glacier, Mont Blanc (COSSA), 1882, A., 290.  
from Nova Scotia (HOW), 1876, ii., 55; 1877, i., 582.  
relation of phillipsite to (FRESSENIUS), 1881, A., 695.
- Stilbophenol**. See *p*-Methoxydiphenylethylene.
- Stilpnomelane** (FISCHER), 1881, A., 990.
- Stomach**, absorption in the (TAPFEINER), 1882, A., 748.  
digestion in the (KIETZ), 1882, A., 877.  
answer to the question "Does it digest itself"? (BÉCHAMP), 1882, A., 1118.  
action of magenta introduced into the (FELTZ and RITTER), 1877, i., 487.
- Stone** of the "Julius Column" (v. GÜMBEL), 1879, A., 25.  
Ransome's new artificial (HIRSCHBERG), 1873, 416.  
volcanic building, so-called (ANON.), 1873, 952.
- Stones**, composition of (SNEELUS), 1878, A., 921.
- Stoneware**, printing fusible colours on (ANON.), 1874, 1115.
- Storage batteries**. See Accumulators under Electrochemistry.



**Storax.** See Resin.

**Storesinols**,  $\alpha$ - and  $\beta$ - (V. MILLER), 1878, A., 159.

**Stove-pipe deposit** (CRENSHAW), 1877, i., 235.

**Stoves**, house, consumption of fuel in (FISCHER), 1880, A., 145; (BODE), 1882, A., 1331.

iron, evolution of carbonic oxide from (FISCHER), 1880, A., 592.

**Straw**, dyeing of, with aniline-green (HARTMANN), 1873, 305.

**Straw pulp**, quick method of preparing (DIETERICH), 1876, i., 136.

**Strawberry roots**, substances obtained from (PIHPSON), 1878, A., 981.

**Strengite** (NIES), 1877, ii., 410; (STRENG), 1881, A., 528.

**Striegovite** from Striegan, in Silesia (WEBER), 1874, 666.

**Strontia.** See Strontium monoxide.

**Strontianite** of Hamm, Westphalia, crystalline form of (LASPEYRES), 1877, ii., 857.

See also Strontium carbonate.

**Strontium**, diffusion of, in nature, at the present time and at various geological epochs (DIEULAFAIT), 1877, ii., 577.

existence of, in all rocks of the primary formation (DIEULAFAIT), 1879, A., 444.

preparation of (FREY), 1877, i., 689.

spectrum of (CIAMICIAN), 1880, A., 361; 1882, A., 349.

volatility of (MALLER), 1876, ii., 354.

flame, relation of, to phosphorescent substances (BÖTTGER), 1874, 643.

**Strontium borates** (DITTE), 1874, 128.  
bromide, action of oxygen on (POTILIZIN), 1879, A., 770.

carbonate, action of sodium oxalate on (SMITH), 1877, ii., 248.

See also Strontianite.

chloride, action of oxygen on (POTILIZIN), 1879, A., 770.

oxychloride (ANDRÉ), 1881, A., 979.  
chromate (MESCHITSCHERSKY), 1882, A., 997.

crystallised, preparation of (BOURGEOIS), 1881, A., 352.

dichromate, preparation of (PREIS and RAYMAN), 1880, A., 444.

hydroxide, heat of formation of (BERTHELOT), 1873, 1096.

nitrate, hydrated, amount of water of crystallisation of (BAKER), 1881, A., 509.

monoxide (*strontia*) in the crystalline state (BRÜGELMANN), 1878, A., 471, 770.

**Strontium monoxide**, action of carbonic anhydride on (RAOULT), 1881, A., 878.

action of chlorine on (KONIGEL-WEISBERG), 1879, A., 596.

action of sulphurous anhydride on (BIRNBAUM and WITTICH), 1880, A., 606.

dioxide (CONROY), 1873, 812; (SCHÖNE), 1874, 127.

hypophosphite (RAMMELSBERG), 1873, 7.

platinocchloride, solubility of, in alcohol (PRECHT), 1880, A., 579.

sulphate, influence of temperature on the coefficients of refraction of (ARZRUNI), 1878, A., 189.

solubility of, in concentrated sulphuric acid (VARENNE and PAULEAU), 1882, A., 465.

See also Celestite.

sulphide (KERN), 1876, i., 39.

**Strontium organic compounds:**—

cyanide (JOANNIS), 1882, A., 484.

gold cyanides (LINDBOM), 1878, A., 131.

*Strophanthus hispidus*, active principle of (HARDY and GALLOIS), 1877, ii., 501.

**Strüverite** (BREZINA), 1877, i., 702.

**Struvite**, new source of (OTTO), 1873, 1107.

*iso***Strychnic acid** (*dihydrostrychnine*) (GAL and ETARD), 1879, A., 387.

**Strychnine.** See under Alkaloids.

**Stucco**, production of (LANDRIN), 1874, 1185.

**Stützite** (SCHRAUF), 1879, A., 898.

“**Stuppfett**,” examination of (GOLD-SCHMIEDT and V. SCHMIDT), 1881, A., 823.

**Styeric acid.** See Phenylglyceric acid.

**Stygerin** (*phenylglycerol*) (GRIMAU), 1873, 1139.

**Styphamic acid.** See Resorcinol, 4:6:2-dinitramido-.

**Styphnic acid.** See Resorcinol, 2:4:6-trinitro-.

**Styrax.** See Storax under Resins.

**Styrene** (*cinnamene*; *phenylethylene*; *styrol*; *styrolene*) (VAN'T HOFF), 1876, i., 703; 1877, i., 214; (V. MILLER), 1878, A., 885.

from Sumatra benzoin (THEEGARTEN), 1874, 1098.

formula of (FUCHS), 1873, 45.

rotatory power of (BERTHELOT), 1876, i., 864; 1878, A., 296.

*p*-amido-, preparation of, from *p*-nitrocinnamic acid (BENDER), 1882, A., 201.

- Styrene** (*cinnamene*; *phenylethylene*; *styrol*; *styrolene*), bromo- (FITTIG and BINDER), 1879, A., 379.
- $\beta$ -bromo-** (BARISCH), 1880, A., 43.
- action of water on (ERLENMEYER), 1881, A., 418.
- conversion of, into acetophenone (FRIEDEL and BALSOHN), 1880, A., 469.
- dibromo-** (KINNICTT), 1882, A., 730.
- $\alpha$ -chloro-**, action of water on (ERLENMEYER), 1881, A., 418.
- $\alpha\beta$ -dichloro-** (DYCKERHOFF), 1877, ii., 481.
- $\omega$ -chloro-*p*-nitro-** (DREWSSEN), 1882, A., 847.
- m*-Styrene** (BÖTSCH), 1882, A., 210.
- rotatory power of (BERTHELOT), 1878, A., 296.
- Styrocamphe** (VAN'T HOFF), 1876, i., 703; 1877, i., 214, 478.
- Styrogenin** (SCHLICKUM), 1882, A., 1340.
- Styrolene**. See Styrene.
- Styrolene alcohol**. See Dihydroxy-ethylbenzene.
- Styryl ethyl oxide** (ERLENMEYER), 1882, A., 191.
- Styryl methyl ketone** (*acetylennamone*; *benzylidenacetone*; *cinnamyl methyl ketone*) (ENGLER and LEIST), 1873, 901; (PERKIN and HODGKINSON), 1880, T., 723; (CLAISEN), 1882, A., 513.
- and its bromine-compound (CLAISEN and CLAPARÈDE), 1882, A., 511.
- Styryl-angelic and -crotonic acids** (PERKIN), 1877, i., 406.
- Styrylgyoxylamide** (CLAISEN and ANTWEILER), 1881, A., 169.
- Styrylgyoxylic acid** (*cinnamylformic acid*) (CLAISEN and ANTWEILER), 1881, A., 169.
- preparation of (CLAISEN and CLAPARÈDE), 1882, A., 520.
- Styryl-**. See also Cinnamyl-.
- Suberane-carboxylic acid** and chloro- (DALE and SCHORLEMMER), 1881, T., 541.
- Suberconic acid** (GANTTER and HELL), 1882, A., 716.
- Suberic acid** (DALE and SCHORLEMMER), 1879, T., 684.
- formation of, by the distillation of crude fatty acids in superheated steam (CAHOUS and DEMARÇAY), 1882, A., 715.
- produced by oxidation, and its salts (GANTTER and HELL), 1880, A., 872.
- Suberic acid**, preparation of (DALE and SCHORLEMMER), 1879, T., 684; (BAUER and GRÖGER), 1881, A., 894.
- and azelaic acid, separation and properties of mixtures of (GANTTER and HELL), 1881, A., 891.
- mono- and di-bromo-** (GANTTER and HELL), 1882, A., 716.
- chloro-, acid ( $C_9H_{14}O_6$ ) from (BAUER and GRÖGER), 1881, A., 894.
- Suberone** (DALE and SCHORLEMMER), 1874, 935; 1881, T., 539.
- preparation of pure (DALE and SCHORLEMMER), 1879, T., 685.
- constitution and reactions of (DALE and SCHORLEMMER), 1879, T., 685; 1881, T., 539.
- cyanhydrin (DALE and SCHORLEMMER), 1881, T., 540.
- Suberylglycollic acid**. See Hydroxy-suberamic acid.
- Substitutions**, heat effect of (LUGININ), 1879, A., 871.
- Succidecyanic ether**. See Succinethyl-carbamide.
- Succinamide**, 2:3-diamido- (CLAUS and HELPENSTEIN), 1881, A., 578.
- Succinethylcarbamide** (*succidecyanic ether*) (MENSCHUTKIN), 1876, i., 379.
- Succinic acid** (CLAUS and CALLIESS), 1878, A., 566; (CLAUS), 1878, A., 857.
- occurrence of, in unripe grapes (BRUNNER and BRANDENBURG), 1876, ii., 400.
- occurrence of, in an incrustation on the bark of *Morus alba* (GOLDSCHMIEDT), 1882, A., 602.
- preparation of, from tartaric acid by fermentation (KÖNIG), 1881, A., 256; 1882, A., 715.
- synthesis of (STEINER), 1874, 568.
- action of bromine on (ORLOWSKI), 1877, ii., 883; (URECH), 1881, A., 248.
- action of, on codeine and on morphine (BECKETT and WRIGHT), 1875, 689.
- solubility of, in water (BOURGOIN), 1874, 358.
- action of nascent hydrogen on (BALBIANO and ALESSI), 1882, A., 1185.
- influence of, on the fermentation of cane-sugar (GAYON), 1881, A., 836.
- oxidation of (ERLENMEYER, SIGEL and BELL), 1874, 980; 1876, i., 893.
- transformation of, into maleic acid (BOURGOIN), 1873, 1127.
- tests for (LUPTON), 1876, i., 966.

- Succinic acid**, heat of formation of salts of (CHRISTSCHOFF), 1880, A., 151.  
 calcium salt of, decomposition of, by heat (FUNARO), 1881, A., 1031.  
 silver salt of, action of iodine on (BIRNBAUM and GAIER), 1880, A., 801.  
 sodium salt of, and succinic anhydride, products of the action of, on benzaldehyde (PERKIN), 1877, i., 394.  
 yttrium salt of (CLEVE and HÖGLUND), 1873, 138.
- Succinic acid**, amido-. See Aspartic acid.
- 2:3-diamido-, and its alkali salts (CLAUS and HELPENSTEIN), 1881, A., 578; (LEHRFELD), 1882, A., 163; (LJUBAVIN), 1882, A., 828.  
*mono-* and *di-*bromo-, preparation of (SCHACHERL), 1881, A., 577.  
*s-dibromo-*, conversion of *n*-pyrotartaric acid into (REBOUL and BOURGOIN), 1877, ii., 592.  
 action of ammonia on (LEHRFELD), 1882, A., 163.  
 action of bromine on (BOURGOIN), 1873, 621.  
 action of thiocarbamide on (NENCKI and SIEBER), 1882, A., 501.  
 reaction of, with water (V. BANDROWSKI), 1879, A., 523.  
*s-* and *iso-dibromo-* (ANSCHÜTZ), 1878, A., 137.  
*isodibromo-* (TÖNNIES), 1878, A., 785.  
 debromination of, by means of silver oxide (BEILSTEIN and WIEGAND), 1882, A., 1051.  
*tribromo-* (BOURGOIN), 1874, 786; (FITTIG and PETRI), 1879, A., 373.  
*chloro-* (ANSCHÜTZ and BENNERT), 1882, A., 828.  
*isoSuccinic acid* (*methylmalonic acid*), synthesis of (ZÜBLIN), 1879, A., 783.  
 action of bromine on, in presence of water (SCHMOEGER), 1882, A., 40.
- Succinic aldehyde** (SAYTZEFF), 1874, 570.
- Succinic anhydride** and its melting point (ANSCHÜTZ), 1878, A., 136.  
 and sodium succinate, products of the action of, on benzaldehyde (PERKIN), 1877, i., 394.  
*isodibromo-* (PICTET), 1881, A., 253.  
*chloro-* (PERKIN), 1882, T., 269.  
*chloro-* and *bromo-* (ANSCHÜTZ and BENNERT), 1882, A., 828.
- Succinic chloride**, reduction of (SAYTZEFF), 1880, A., 712; 1882, A., 497.
- Succinic fermentation** (MIQUEL), 1879, A., 394.
- Succinimide**, action of bromine on (KISIELINSKI), 1878, A., 43.  
 action of phosphorus pentachloride, and of zinc dust on (BERNTSEN), 1880, A., 713.  
 action of zinc on (BELL), 1880, A., 630.
- Succinin** (FUNARO and DANESI), 1880, A., 463.
- Succinocarbamic acid**. See Succinuric acid.
- Succinocyanamic acid**, succinocyanamide, succinocyanamidic acid, and succinocyanimide, and their salts (MÖLLER), 1881, A., 258.
- Succinodicarbamide** (CONRAD), 1874, 791.
- Succinodi- $\alpha$ -naphthylidiamide** and its nitro-derivatives (HÜBNER), 1882, A., 181.
- Succinodi-*p*-tolylidiamide** (*ditolylsuccinimide*) and *di-* and *tetra-nitro-* (HÜBNER), 1882, A., 181.
- Succino- $\alpha$ -naphthylimide**, and *dinitro-* (HÜBNER), 1882, A., 181.
- Succinone** (FUNARO), 1881, A., 1031.
- Succino-*l*-nitranilide** (HÜBNER), 1882, A., 181.
- Succinonitrile** (*ethylenic cyanide*) (NEVOLÉ and TCHERNIAČ), 1878, A., 964.
- Succino-*l*-nitro- $\alpha$ -naphthylimide** (HÜBNER), 1882, A., 181.
- Succinophenylimide**, amido- (TAYLOR), 1876, i., 602.  
*o-* and *p-nitro-* [m.p. 156° and 208°] (TAYLOR), 1876, i., 602; (HÜBNER), 1882, A., 181.
- Succinosulphocarbamic acid**. See Thio-succinuric acid.
- Succinotolylimides** (DE BECHI), 1879, A., 461, 527.
- Succinotrimethylphenylimide** (EISENBERG), 1882, A., 956.
- Succinuric acid** (*succinocarbamic acid*) (PIKE), 1874, 49.  
 amido- (GUARESCHI), 1878, A., 138.
- Succinyl**, relation of tetric acid and its homologues to (DEMARÇAY), 1879, A., 459.
- Succinylfluorescein**, and *tetrabromo-* (NENCKI and SIEBER), 1881, A., 592.
- Succinylpropionic acid** (HERRMANN), 1882, A., 713.
- Succinylsuccinic acid** (WISLIGENUS and HERRMANN), 1876, i., 371; (HERRMANN), 1882, A., 713.
- Succotash**, tinned, composition of (WIGNER), 1881, A., 212.
- Sucrose** (*saccharose*). See under Carbohydrates.

- Sugar**, brain-. See Cerebrose under Carbohydrates.  
 grape-. See Dextrose under Carbohydrates.  
 invert-. See under Carbohydrates.  
 milk-. See Lactose under Carbohydrates.
- Sugar-beet**. See Beetroot under Agricultural chemistry.
- Sugar-candy**, preparation of (WEITZ), 1879, A., 844.
- Sugar-cane**, composition of the seeds of two varieties of (COSSA), 1873, 402.
- Sugar-lime** as a solvent for glue (PUSCHER), 1873, 306.
- Suint** (SCHULZE and BARBIERI), 1880, A., 520.  
 constitution of (SCHULZE), 1873, 513, 920, 1219.  
 from wool, utilisation of (FISCHER), 1879, A., 86.  
 of Russian wool, extraction of potash from (FLEKKEL), 1881, A., 475.  
 See also Wool fat.
- Sulphacetic acid**, action of phosphorus pentachloride on (SIEMENS), 1873, 1022.
- m*-**Sulphamidobenzoic acid** (REMSEN and PALMER), 1882, A., 1096.
- $\alpha$ -**Sulphamidobenzoic acid**, *p*-bromo- (BÖTTINGER), 1878, A., 730.
- Sulphamidobenzoic sulphinide** (*p*-anhydrosulphaminebenzoic acid) (FAHLBERG), 1881, A., 816.
- p*-**Sulphamidocinnamic acid** (PALMER), 1882, A., 1204.
- Sulphamidomesitylenic acids**, *o*- and *p*-, and their salts (HALL and REMSEN), 1877, ii., 777; 1881, A., 821; (JACOBSEN), 1879, A., 643; 1881, A., 429.
- Sulphamidomesitylenic anhydride** and its salts (HALL and REMSEN), 1881, A., 820.
- Sulphamidoisophthalic acid** (ILES and REMSEN), 1878, A., 505.
- Sulphamidoisophthalic anhydride** (*isophthalic sulphinide*) and its salts (COALE and REMSEN), 1880, A., 258; 1881, A., 1038.
- Sulphamidosulphobenzoic acid** (FAHLBERG), 1881, A., 817.
- Sulphamidoterephthalic acid** (ILES and REMSEN), 1878, A., 505.
- Sulphamido-*m*-toluic acid** (ILES and REMSEN), 1877, ii., 776; 1878, A., 413, 724.  
 oxidation of (REMSEN), 1880, A., 473; (COALE and REMSEN), 1881, A., 1038.
- Sulphamido-*p*-toluic acid** (ILES and REMSEN), 1878, A., 413; (HALL and REMSEN), 1880, A., 257; 1882, A., 186.
- Sulphamidotrimetic acid**, acid potassium salt of (JACOBSEN), 1881, A., 432.
- Sulphamidouvitic acid** and its salts (JACOBSEN), 1881, A., 430; (HALL and REMSEN), 1881, A., 821.
- Sulphamidouvitic anhydride** (*anhydrosulphaminevitic acid*) (JACOBSEN), 1881, A., 430.
- Sulphanilic acid**. See Aniline-*p*-sulphonic acid.
- Sulphates**. See under Sulphur.
- Sulphi-*p*-bromobenzoic acid** (BÖTTINGER), 1877, i., 468; 1878, A., 730.
- Sulphides**. See under Sulphur.
- Sulphimidoterephthalamide** (REMSEN and BURNEY), 1881, A., 819.
- Sulphines** (CAHOURES), 1875, 1181; 1876, i., 696; (KRÜGER), 1877, i., 186.  
 aromatic (SCHÖLLER), 1875, 258.
- Sulphinic acids** of the fatty group, formation of, from the chloranhydrides of the sulphonic acids (PAULY), 1877, ii., 734.  
 constitution of (OTTO), 1880, A., 810.
- Sulphites**. See under Sulphur.
- Sulphobenzaldehyde**, hydrobromo- (BÖTTINGER), 1877, i., 468.
- Sulphobenzamic acid**. See *m*-Sulphamidobenzoic acid.
- Sulphobenzene**. See Dibenzyllic disulphide.
- Sulphobenzeneazo-**. See under Azo-
- Sulphobenzide**. See Diphenylsulphone.
- Sulphobenzoic acid**, action of sodium formate on (MEYER), 1874, 478.  
*m*-bromo- (BÖTTINGER), 1876, ii., 202.  
 hydrobromo- (BÖTTINGER), 1877, i., 468.
- o*-**Sulphobenzoic acid** (FAHLBERG and REMSEN), 1879, A., 629.  
 attempt to prepare (REMSEN), 1876, i., 258.  
 imide of. See "Saccharin."  
*p*-amido- and *p*-nitro-, and their salts (HART), 1881, A., 1144.
- m*-**Sulphobenzoic acid** (HÜBNER), 1878, A., 145.  
*o*-bromo- (HÜBNER and POST), 1874, 59.  
*o*-chloro- (HÜBNER and MAJERT), 1873, 1136.  
*p*-chloro- (CÖLLEN), 1876, ii., 412; 1879, A., 155; (CÖLLEN and BÖTTINGER), 1877, i., 82.



- p*-Sulphobenzoic acid (REMSEN), 1876, i., 257; (HÜBNER), 1878, A., 145.  
*o*- and *m*-amido-, and *o*- and *m*-nitro-, and their salts (HART), 1881, A., 1144.  
*m*-nitro- (REMSEN), 1875, 1263.  
 Sulphobenzoic acids, *p*-bromo- (HÜBNER and HAESSELBARTH), 1873, 887; (HÜBNER and POST), 1874, 57.  
 2:4-*di*Sulphobenzoic acid (BLUMSTRAND), 1873, 506; (FAHLBERG), 1881, A., 817.  
 Sulpho-*libromazobenzolic* acid. See Benzeneazobenzene-sulphonie acid.  
 Sulpho-*p*-bromobenzamic acid. See *p*-Bromo- $\alpha$ -sulphamidobenzoic acid.  
 Sulpho-*p*-bromobenzoic acid and its salts (BÖTTINGER), 1876, ii., 202, 413; 1877, i., 82; 1878, A., 729.  
 Sulpho-*p*-bromobenzoic chloride (BÖTTINGER), 1878, A., 729.  
   action of zinc dust on (BÖTTINGER), 1877, i., 468.  
 $\alpha$ -Sulphobutyric acid and its salts (v. HEMILIAN), 1873, 747; (GRABOWSKI), 1875, 881, 1175.  
 Sulphobutyric acids,  $\alpha$ - and  $\beta$ - (v. HEMILIAN), 1873, 1021.  
 "Sulphocamphoric acid" (KACHLER), 1874, 155.  
 Sulphocarbamides. See Thiocarbamides.  
 Sulphocarbimide. See Thiocarbimide.  
 Sulphocarbonates. See Thiocarbonates.  
 Sulphocarboxybenzeneazohydroxy-naphthoic acid (GRIESS), 1879, A., 317.  
 Sulphocarboxybenzeneazo- $\beta$ -naphthol- $\alpha$ -disulphonic acid (GRIESS), 1882, A., 49.  
 Sulphochromites. See Chromium, double sulphides of.  
 Sulphocinnamic acids, *o*-, *m*-, and *p*- (RUDNEFF), 1873, 505; 1875, 76; (PALMER), 1882, A., 1204.  
*p*-Sulphocinnamic chloride (PALMER), 1882, A., 1204.  
 Sulphocyanates. See Thiocyanates.  
 " $\psi$ -Sulphocyanogen" (CNSH) (HODGKINSON), 1877, i., 195.  
*di*Sulphodinaphthylidic dinaphthyloxide-disulphonate and pyrophosphate (CLAUS and ZIMMERMANN), 1881, A., 914.  
 "Sulphoform" (PFANKUCH), 1873, 363.  
*tri*Sulphohydroxybenzoic acid. See Hydroxytrisulphobenzoic acid.  
 Sulphohydroxylsalicylic acid. See 2:5-Dihydroxysulphobenzoic acid.  
 Sulphomorphide. See Tetramorphine sulphate under Alkaloids.  
 "Sulphonaphthalene" (CLEVE), 1878, A., 154.  
 Sulphonaphthalide. See Dinaphthylsulphone.  
 $\alpha$ -Sulpho- $\alpha$ -naphthoic acid and its salts (BATTERSHALL), 1873, 1138.  
 Sulpho- $\alpha$ -naphthoic acids,  $\alpha$ -,  $\beta$ - and  $\gamma$ - (STUMPF), 1878, A., 74.  
 $\alpha$ -Sulpho- $\beta$ -naphthoic acid (BATTERSHALL), 1873, 1138; (STUMPF), 1878, A., 75.  
 Sulpho- $\beta$ -naphthyllic orthophosphate (CLAUS and ZIMMERMANN), 1881, A., 915.  
 Sulpho- $\beta$ -naphthylphosphoric acid, barium salt of (CLAUS and ZIMMERMANN), 1881, A., 915.  
 Sulphones, new synthesis of (OTTO), 1880, A., 810.  
   aromatic (MICHAEL and ADAIR), 1877, ii., 612; 1878, A., 415.  
   synthesis of (BECKURTS and OTTO), 1879, A., 242.  
   mixed (CHRÜSTSCHOFF), 1875, 162.  
   of the olefine series (BECKMANN), 1879, A., 37.  
 Sulphonic acid, amido-, and its salts (BERGLUND), 1876, ii., 44; 1877, ii., 111; 1878, A., 643.  
   bromo-, attempts to prepare (CLAUSNIZER), 1879, A., 354.  
   chloro- (sulphuryl hydroxychloride; sulphuric monochloride) (MELSENS), 1873, 724; (MÜLLER), 1873, 841; (BECKURTS and OTTO), 1879, A., 200.  
   preparation and physical properties of (THORPE), 1880, T., 146, 358.  
   boiling point of (CLAUSNIZER), 1879, A., 691.  
   mode of action of (BECKURTS and OTTO), 1879, A., 229.  
   action of, on alcohols (v. ORLOWSKY), 1875, 875; (CLAËSSON), 1879, A., 775; (BEHREND), 1880, A., 310.  
   action of, on the chlorides of titanium, antimony, tin, and silicon (CLAUSNIZER), 1879, A., 201.  
   behaviour of, with certain elements (HEUMANN and KÖCHLIN), 1882, A., 927.  
   action of silver nitrate on (THORPE), 1882, T., 297.  
   formation of acid chlorides by aid of (HEUMANN and KÖCHLIN), 1882, A., 1185.  
   imido- (BERGLUND), 1876, ii., 44.  
   nitro-, preparation of (GIRARD and PABST), 1879, A., 383.

- Sulphonic acid**, nitro-, behaviour of, with sulphuric acid (LUNGE), 1879, A., 771.  
denitrification of, by sulphurous acid (LUNGE), 1877, ii., 944.
- Sulphonic acids** in urine (BAUMANN), 1876, i., 726; ii., 212, 534.  
action of fused alkalis on (DEGENER), 1880, A., 320.  
action of phosphorus pentachloride on (BARBAGLIA and KEKULÉ), 1873, 277.  
aromatic (NÖLTING), 1875, 264; 1876, i., 928.  
organic, preparation of (v. HEMILIAN), 1873, 1021.  
of hydroxyazobenzene, and their derivatives (LIMPRICHT), 1882, A., 1074.  
from isomeric nitramido- and di-amido-benzenes (POST and HARDTUNG), 1880, A., 394; 1881, A., 93.  
amido- (LIMPRICHT), 1875, 267.  
formation of, by the action of concentrated sulphuric acid (NEVILLE and WINTHER), 1880, T., 625.
- Sulphonic anhydride**, nitro- (THORPE), 1882, T., 297; (THORPE and DYSON), 1882, T., 298.
- Sulphonic chloranhydrides**, formation of sulphinic acids of the fatty group from (PAULY), 1877, ii., 734.
- Sulphonic chlorides**, action of, on amines (MICHLER and MOKO), 1879, A., 920.
- Sulphonic compounds**, preparation of, from diazo-compounds by means of sulphurous acid (MÜLLER and WIESINGER), 1879, A., 933.  
action of chlorine on (SPRING and WINSSINGER), 1882, A., 938.
- Sulphonic group**, replacement of the diazo-group by (HÜBNER), 1878, A., 145.  
influence of nitro- and amido-groups on a, entering the benzene molecule (POST), 1880, A., 238; 1881, A., 91.  
displacement of, by bromine (KELBE), 1882, A., 618.
- Sulphophenic acid**. See Phenolsulphonic acid.
- m*-Sulpho- $\beta$ -phenylpropionic acid, and *p*-bromo-, and its salts (GÖRING), 1878, A., 318.
- 4-Sulphoisophthalic acid and its salts (JACOBSEN and LÖNNIES), 1881, A., 50; (COALE and REMSEN), 1881, A., 1038.
- 5-Sulphoisophthalic acid ( $\gamma$ -isophthalosulphonic acid) (LÖNNIES), 1881, A., 50.
- $\alpha$ -Sulphopropionic acid, preparation of (KURBATOFF), 1873, 873.
- Sulphopropionic coumarilic acid**. See Methylcoumarinsulphonic acid.
- Sulphosalicylic acids** (REMSEN), 1874, 1167; 1876, i., 594.  
5-amido- and 5-nitro- (HÜBNER), 1878, A., 150.
- Sulphotannic acids**, synthesis of (SCHIFF), 1876, i., 260.
- Sulphoterephthalic acid** and its salts (HALL and REMSEN), 1880, A., 257; 1882, A., 187; (SCHOOP), 1881, A., 278; (REMSEN and BURNEY), 1881, A., 819.
- Sulphothionyl chloride**. See under Sulphur.
- Sulpho-*p*-toluamide** (FISCHLI), 1879, A., 639.
- Sulphotolueneazotoluenesulphonic acids** and their metallic salts, chlorides and amides (NEALE), 1880, A., 806.
- Sulpho-*p*-toluic acid** (FISCHLI), 1879, A., 638.  
formation of *p*-toluic acid from (REMSEN), 1875, 1264.
- Sulphotoluide**. See Di-*p*-tolylsulphone.
- Sulphouvitic acid** and its salts (JACOBSEN), 1881, A., 431.
- Sulphovinic acid**. See Ethylsulphuric acid.
- Sulphoxyazobenzolic acid**. See *p*-Hydroxybenzeneazobenzenesulphonic acid.
- Sulphur** from Cianciana and Lercara, in Sicily (v. ZEPHAROVICH), 1877, i., 583.  
native, contemporaneous production of, in the subsoil of Paris (DAUBRÉE), 1881, A., 227; 1882, A., 470.  
from the Petzen, crystallographic notice of (v. ZEPHAROVICH), 1881, A., 232.  
in fossil resin (HELM), 1879, A., 300, 896.  
free, occurrence of, in the dry distillation of tar (KEHLSTADT), 1880, A., 831.  
recovery of, from gypsum and Glauber's salt in the manufacture of glass (SCHOTT), 1876, ii., 670.  
preparation of, from pyrites (HORMANN), 1877, ii., 235.  
decomposition of soda-waste for the production of (KRAUSHAAR), 1878, A., 171.  
production of, from sulphurous acid and hydrogen sulphide (STINGL and MORAWSKI), 1879, A., 1012.

**Sulphur**, extraction of (ANON.), 1877, i., 759; (DE LA TOUR DU BREUIL), 1882, A., 115.  
 extraction of, by means of superheated steam (GERLACH), 1879, A., 284.  
 causes of loss in extracting (SESTINI), 1875, 335.  
 use of carbon *disulphide* for the extraction of (MROWEC), 1879, A., 837.  
 crystallisation of (SILVESTRI), 1875, 335.  
 crystalline forms of (HANNAY), 1873, 826.  
 prismatic and octahedral (GERNEZ), 1874, 1133; 1877, i., 44.  
 rhombic crystals of, obtained by fusion (VOM RATH), 1877, ii., 860.  
 precipitated (SANSONI and CAPPELLINI), 1877, i., 272.  
 heat of combustion of (RAMSAY), 1879, T., 697; (THOMSEN), 1880, A., 785.  
 heat of combination of, with carbon monoxide (BERTHELOT), 1879, A., 591.  
 specific or ebullition volume of (RAMSAY), 1879, T., 471.  
 specific volume of (THORPE), 1880, T., 143, 389.  
 vapour-density of (V. and C. MEYER), 1879, A., 769.  
 expansion of fused (PISATI), 1878, A., 268; (SCICHLONE), 1878, A., 553.  
 dilatation, viscosity, and capillarity of (PISATI), 1878, A., 268.  
 affinity of hydrogen for (THOMSEN), 1873, 126, 838.  
 affinity of oxygen for (THOMSEN), 1873, 1190.  
 affinity of metals for oxygen and (SCHUMANN), 1877, ii., 704.  
 oxygen and the halogens, reciprocal displacements between, when combined with hydrogen (BERTHELOT), 1879, A., 296.  
 phosphorescence of (JOUBERT), 1874, 1058.  
 solubility of (VULPIUS), 1879, A., 104.  
 solution of, in acetic acid (LIEFERMANN), 1877, ii., 276.  
 native, chemical nature of liquid inclosures found in crystals of (SILVESTRI), 1882, A., 810.  
 an experiment with (GROSS), 1880, A., 700.  
 action of arsine, phosphine and ammonia on (JONES), 1876, i., 648.  
 action of, on arsenic (GELIS), 1873, 843.

**Sulphur**, action of, on barium benzoate (RADZISZEWSKI and SOKOLOWSKI), 1874, 476.  
 action of bromine on (HANNAY), 1878, T., 284; 1879, T., 16.  
 action of, on calcium carbonate (BELLUCCI), 1875, 131; (POLLACCI), 1875, 131, 612.  
 action of, on calcium carbonate in presence of water (BRUGNATELLI and PELLGIO), 1875, 735.  
 action of molten, on gypsum and on carbonate of lime (SESTINI), 1876, i., 879.  
 action of, on carbonates in presence of water (POLLACCI), 1875, 336.  
 action of, on glass (SELEZNEFF), 1882, A., 696.  
 and iodine, behaviour of, to mercury (V. SCHRÖTTER), 1873, 476.  
 action of, on certain metallic solutions (FILHOL and SENDERENS), 1881, A., 1097.  
 action of, at high temperatures, on normal paraffins (CABOT), 1877, ii., 867.  
 action of organic solvents on (BERTHELOT), 1879, A., 771.  
 action of stibine on (JONES), 1876, i., 645.  
 action of, on alkaline sulphides in dilute solutions (FILHOL), 1882, A., 141.  
 action of, on water (COLSON), 1881, A., 21.  
 new modes of action of, in organic compounds (PFANKUCH), 1873, 363.  
 oxidation of (POLLACCI), 1876, i., 187.  
 oxidation of, in gas on combustion (YOUNG), 1877, ii., 110, 948; 1880, A., 355.  
 in coal-gas (WERIGO), 1876, ii., 217.  
 and ammonia, removal of, from coal-gas by a continuous process (HARCOURT and FISON), 1873, 1270.  
 condition in which, exists in coal (WALLACE), 1880, A., 708.  
 condition of, in coal, and its relation to coking (DROWN), 1882, A., 780.  
 removal of, from coke (ANON.), 1873, 1270.  
 in zinc-dust (WAGNER), 1882, A., 670.  
 and other flames utilisable in photography (RICHE and BARDY), 1875, 669.  
 behaviour of substances containing, in the animal organism (SALKOWSKI), 1876, i., 949.

**Sulphur**, influence of, on the excretion of sulphuric acid in the urine (REGENSBURGER), 1877, ii., 911.  
 action of, in destroying oidium, and on the emission of hydrogen by plants (POLLACCI), 1876, ii., 540.  
 mode of action of, as a remedy against vine-disease (MORITZ), 1880, A., 281.  
 precipitated, use of, in dyeing (REIMANN), 1878, A., 356, 824.  
**Sulphur compounds**, decolouration of indigo-solution and other vegetable dyes by various (SCHÄR), 1876, ii., 103.  
 action of stibine on (JONES), 1876, i., 647.  
 with copper and iron, crystals of, from Röras (BRÖGGER), 1881, A., 353.  
 with nitrogen (DEMARÇAY), 1881, A., 222, 346, 976.  
**Sulphur salts**, new (SCHNEIDER), 1873, 1197; 1874, 228, 871; 1875, 43, 533.  
 derived from phosphorus trisulphide (LEMOINE), 1882, A., 9.  
**Sulphur bromide** (HANNAY), 1873, 823; (MUIR), 1875, 845.  
 heat of formation of (OGIER), 1881, A., 673.  
 oxytetrabromide, experiments on the preparation of (CLAUSNIZER), 1879, A., 354.  
*monochloride (sulphothionyl chloride)* (MICHAELIS and SCHIFFERDECKER), 1874, 20.  
 physical properties of (THORPE), 1880, T., 146, 356.  
 heat of formation of (OGIER), 1881, A., 673.  
 action of, on aniline (ROORDA SMIT), 1876, i., 602.  
 dichloride (ISAMBERT), 1878, A., 553.  
 decomposition of (MICHAELIS and SCHIFFERDECKER), 1874, 20.  
*tetrachloride*, formation and decomposition of (MICHAELIS and SCHIFFERDECKER), 1873, 132; 1874, 20.  
 oxytetrachloride ( $S_2OCl_4$ ) (OGIER), 1882, A., 694.  
 thionyl chloride (MICHAELIS), 1874, 225.  
 preparation and physical properties of (THORPE), 1880, T., 146, 354.  
 thermochemistry of (OGIER), 1882, A., 463.  
 action of, on silvernitrate (THORPE), 1882, T., 297.

**Sulphur trioxytetrachloride** (MICHAELIS and SCHIFFERDECKER), 1874, 21; (MICHAELIS and MATHIAS), 1874, 226.  
 action of carbon disulphide on (MICHAELIS), 1874, 226.  
 sulphuryl dichloride (BECKURTS and OTTO), 1879, A., 200.  
 preparation of (BEHREND), 1876, i., 878; (SCHULZE), 1882, A., 10.  
 preparation and physical properties of (THORPE), 1880, T., 359.  
 production of, from sulphuric anhydride and boron chloride (GUSTAVSON), 1873, 597.  
 thermal constants of (OGIER), 1882, A., 463.  
 reactions of (HEUMANN and KÖCHLIN), 1882, A., 1262.  
 action of, on alcohols (BEHREND), 1877, i., 182; ii., 287.  
 action of, on aniline (WENGHÖFFER), 1877, ii., 447; 1878, A., 297.  
 action of, on ethylic acetoacetate (ALLIHN), 1878, A., 566.  
 sulphuryl hydroxychloride. See Sulphonic acid, chloro-.  
 pyrosulphuryl chloride (*disulphuryl chloride*) (MICHAELIS), 1874, 225.  
 physical properties of (THORPE), 1880, T., 146, 360.  
 density of the vapour of (OGIER), 1882, A., 694.  
 thermal constants of (OGIER), 1882, A., 463.  
 chloronitride (*nitrogen thiocchloride*) (DEMARÇAY), 1881, A., 346, 976.  
**Hydrogen sulphide** (*sulphuretted hydrogen*; *sulphur hydride*) (CASAMAJOR), 1881, A., 876.  
 formation of, from sulphur and water (BÖHM), 1882, A., 801.  
 preparation of (FLETCHER), 1879, A., 1013.  
 new process for the preparation of, as a laboratory agent (SKEY), 1873, 840.  
 preparation of, for chemico-legal investigations (OTTO), 1879, A., 671.  
 formation of, from sulphur in a fermenting liquid (DUMAS), 1873, 81.  
 fermentation accompanied by formation of (MIQUEL), 1880, A., 132.  
 apparatus for obtaining (KERN), 1875, 864.



**Hydrogen sulphide** (*sulphuretted hydrogen*; *sulphur hydride*),  
 action of, on alkaloids (SCHMIDT), 1876, ii., 94.  
 action of bacteria on (HATTON), 1881, T., 254.  
 action of bromine, iodine, and sulphur on (NAUMANN), 1877, i., 272.  
 behaviour of, with carbon dioxide at a red heat (KÖHLER), 1878, A., 372.  
 action of, on chloral hydrate (WYSS), 1874, 460.  
 action of, on the granites of Luchon (GARRIGOU), 1874, 1149.  
 action of, on hydrogen dioxide (FAIRLEY), 1877, i., 23.  
 behaviour of, with the salts of the heavy metals (DELFFS), 1880, A., 746.  
 action of, on mercury fulminates (STEINER), 1876, i., 378.  
 action of, on saline solutions of nickel and other metals of the same group (BAUBIGNY), 1882, A., 1031.  
 action of, on potassium tetrathionate (LEWES), 1882, T., 302.  
 action of, on sulphurous acid in presence of salts (STINGL and MORAWSKI), 1879, A., 1012.  
 decolourising properties of (BELLUCCI), 1882, A., 781.  
 apparatus for dissolving, under pressure (COOKE), 1874, 19.  
 decomposition of insoluble carbonates by (NAUDIN and DE MONTHOLON), 1876, ii., 479.  
 and sulphurous acid, production of sulphur from (STINGL and MORAWSKI), 1879, A., 1012.  
 use of, in the dry way in analysis (CARNOT), 1879, A., 963.  
 method of manipulating (COOKE), 1877, ii., 701.  
 estimation of, in mineral waters (LAND), 1874, 1007.  
 apparatus (HART), 1881, A., 787.  
 hydrate of (DE FORCRAND), 1882, A., 1027.  
**Hydrogen persulphide** (RAMSAY), 1874, 857.  
 heat of formation of (SABATIER), 1880, A., 691.  
**Sulphides**, native (MEUNIER), 1877, ii., 708.  
 origin of, found in sulphurous waters (POLLACCI), 1876, i., 38.  
 formation and decomposition of metallic (HEUMANN), 1875, 41.

**Sulphides**, formation of double metallic (PRIWOZNIK), 1874, 227.  
 some general properties of metallic (DE CLERMONT and GUIOT), 1877, ii., 842.  
 thermochemistry of (BERTHELOT), 1874, 1048; (SABATIER), 1881, A., 492.  
 heat of formation of metallic (BERTHELOT), 1874, 962; (THOMSEN), 1879, A., 433.  
 arsenides and thioarsenides, crystallographic and chemical relations of natural (RAMMELSBERG), 1874, 547.  
 of certain metals, law of volumes in (SCHRÖDER), 1878, A., 929.  
 dissociation of metallic (DE CLERMONT and FROMMEL), 1879, A., 13.  
 decomposition of certain, by hydrochloric acid (RAMMELSBERG), 1874, 815.  
 union of, by pressure (SPRING), 1881, A., 501; 1882, A., 273.  
 action of ammoniacal salts on, and its application to mineral analysis (DE CLERMONT), 1879, A., 672.  
 action of iodine on natural (BOLTON), 1878, A., 940.  
 action of insoluble metallic, on acid solutions of nickel sulphate in presence of hydrogen sulphide (BAUBIGNY), 1882, A., 928.  
 action of organic solvents on metallic (BERTHELOT), 1879, A., 771.  
 action of potassium permanganate on (SCHLAGDENHAUFFEN), 1875, 186.  
 action of potassium hydrogen sulphate on natural (JANNETTAZ), 1874, 773.  
 action of selenium on metallic (POTILIZIN), 1879, A., 771.  
 action of sulphurous acid on recently precipitated insoluble (GUEROUT), 1873, 349.  
 oxidation of metallic (DE CLERMONT and GUIOT), 1878, A., 199.  
 new application of rapid oxidation by which, are utilised for fuel (HOLLWAY), 1879, A., 755.  
 colour produced by Nessler's test in water containing soluble (GARSIDE), 1875, 1287.  
 analysis of a mixture of sulphates, thiosulphates, and (SCHLAGDENHAUFFEN), 1875, 910.

- Sulphides**, estimation of sulphur in (DROWN), 1881, A., 645.
- Sulphur iodide** (MENKE), 1879, A., 353.  
heat of formation of (OGIER), 1881, A., 673.  
mercaptides. See Diethylic *tetra-* and *pentu-*sulphides.
- oxides, heat of formation of (BERTHELOT), 1880, A., 688; 1881, A., 6, 673.
- sesquioxide* ( $S_2O_3$ ) (*hyposulphurous anhydride*) (WEBER), 1876, i., 677.
- dioxide* (*sulphurous anhydride*), heat of formation of (BERTHELOT), 1877, ii., 823; 1881, A., 673.  
boiling-point of liquid (PIERRE), 1873, 597.  
solubility of, in sulphuric acid (DUNN), 1882, A., 1027.  
action of, on aluminium chloride (ADRIANOWSKY), 1879, A., 620, 915.  
action of bacteria on (HATTON), 1881, T., 252.  
action of, on the oxides of the alkaline earth metals (BIRNBAUM and WITTICH), 1880, A., 606.  
action of, on nitric oxide (KUHLMANN), 1874, 829, 924.  
action of, on nitric oxide in presence or absence of oxygen (LUNGE), 1882, A., 139.  
action of, on zinc ethyl (ZUCKSCHWERDT), 1874, 674.  
action of, on plants (v. SCHROEDER), 1874, 492; 1880, A., 496.  
application of, in bleaching (MOYRET), 1882, A., 1337.  
compound of, with aurin (DALE and SCHORLEMMER), 1873, 437.
- trioxide* (*sulphuric anhydride*; *sulphuric oxide*), amount of, in fuming sulphuric acid (WINKLER), 1881, A., 1097.  
formation of, in the roasting of pyrites (SCHEURER-KESTNER), 1875, 1237; 1876, ii., 120; (BODE), 1876, ii., 119; (LUNGE and SALATHÉ), 1878, A., 351.  
conversion of sulphurous acid into, by contact action for preparing fuming sulphuric acid (WINKLER), 1876, i., 783.  
preparation and properties of (WEBER), 1877, ii., 164.  
heat of vaporisation of (BERTHELOT), 1880, A., 693; 1881, A., 876.  
action of aluminium chloride on (ADRIANOWSKY), 1879, A., 620, 915.
- Sulphur trioxide** (*sulphuric anhydride*; *sulphuric oxide*), action of ethylic chloride on (v. PURGOLD), 1873, 1216.  
action of, on phenyl mercaptan (SCHILLER and OTTO), 1877, i., 463.  
*heptoxide* (BERTHELOT), 1878, A., 469, 554.
- Sulphur oxygen-acids** (MAUMENÉ), 1880, A., 5.  
formation of (THOMSEN), 1873, 717.
- Sulphurous acid** (MELSENS), 1873, 724.  
conversion of, into sulphuric anhydride by contact action, for preparing fuming sulphuric acid (WINKLER), 1876, i., 783.  
mode of generating, for use as a disinfectant (KEATES), 1877, i., 236.  
value of, as a disinfectant (WOLFF-HÜGEL), 1882, A., 1009.  
electrolysis of (GUEROUT), 1877, ii., 820.  
action of, on lead iodide (MICHAELIS and KOETHE), 1874, 26.  
action of hydrogen sulphide on, in presence of salts (STINGL and MORAWSKI), 1879, A., 1012.  
action of, on recently precipitated insoluble sulphides (GUEROUT), 1873, 349.  
function of, when used for the saccharification and alcoholisation of grain (v. HEMILIAN and MELNIKOFF), 1873, 304.  
oxidation of (BERTHELOT), 1877, ii., 841.  
and hydrogen sulphide, production of sulphur from (STINGL and MORAWSKI), 1879, A., 1012.  
use of, in ice-machines (PICTET), 1878, A., 251.  
use of, in dyeing (ANON.), 1874, 500.
- Sulphites**, double (BERGLUND), 1874, 771.
- Sulphurous acid**, detection and estimation:—  
detection of, in wine (WARTHA), 1880, A., 680; 1882, A., 1231; (LIEBERMANN), 1882, A., 994.  
indirect estimation of (GROSSMANN), 1878, A., 1006.  
estimation of, by iodine (MOHR), 1874, 288.  
estimation of, in hops (GRIESSMAYER), 1874, 191.  
estimation of, in wine (HAAS), 1882, A., 773.

- Sulphuric acid**, presence of, in milk (MUSO and SCHMIDT), 1880, A., 423.
- production of, in the combustion of coal gas (YOUNG), 1877, ii., 110, 948; 1880, A., 355; (HEISCH; WIGNER), 1877, ii., 948; (WRIGHT), 1880, T., 422.
- formation of, in seedlings (SCHULZE), 1877, i., 104.
- Gay-Lussac's apparatus for the manufacture of (ANON.), 1874, 400.
- apparatus for demonstrating the manufacture of (HEUMANN), 1877, i., 438.
- manufacture of (BÜCHNER), 1875, 669; 1876, i., 118.
- chemistry of the (SMITH), 1873, 538.
- theory and practice of the (BODE), 1873, 413.
- regulation of the escape of sulphur gases in the (MACTEAR), 1877, ii., 815.
- gases evolved in the, estimation and testing of (MACTEAR), 1880, A., 745.
- nitric acid in the (DAVIS), 1878, A., 615.
- loss of nitric acid in the (HASENBACH), 1874, 822.
- loss of nitre in the (MACTEAR), 1879, A., 838.
- loss of oxides of nitrogen in the, and a means of preventing it (LASNE and BENKER), 1881, A., 475.
- remarks on Lasne and Benker's process for reducing the loss of nitre in the (LUNGE), 1882, A., 1010.
- chamber, estimation of nitric oxide in the exit gases of the (DAVIS), 1880, A., 746; (LUNGE), 1882, A., 774.
- introduction of nitric acid into the, along with the steam (LIEBIG), 1880, A., 196.
- nitrogen trioxide in the (LUNGE), 1878, A., 833; 1879, A., 502; 1880, A., 440; 1882, A., 926.
- crystals, constitution of (MICHAELIS and SCHUMANN), 1875, 43.
- applications of (GIRARD and PABST), 1881, A., 476.
- estimation of oxygen in the gases of the (LIEBIG), 1873, 935; (BODE), 1873, 1159.
- Sulphuric acid**, chemical function of the Glover tower in the manufacture of (VORSTER), 1875, 484.
- Glover tower, action of the (HURTER), 1878, A., 614, 689.
- denitrating action of the (LUNGE), 1878, A., 757.
- from denitrating and absorbing towers, composition of (DAVIS), 1878, A., 614.
- conversion of sulphurous acid into sulphuric anhydride by contact-action for preparing fuming (WINKLER), 1876, i., 783.
- wearing out of platinum vessels in the concentration of (SCHEURER-KESTNER), 1876, i., 345; ii., 674; 1878, A., 650; 1880, A., 706.
- purification of, by crystallisation (MODDERMAN), 1882, A., 1163.
- heat evolved by the action of, on olive oil (MAUMENÉ), 1876, i., 868, 1084.
- heat evolved on mixing water and (PFAUNDLER), 1875, 1150; (CROULLEBOIS; BERTHELOT), 1877, ii., 824.
- of different degrees of concentration, solidifying points of (LUNGE), 1882, A., 362.
- boiling of (BOBIERRE), 1875, 1237.
- boiling points of (LUNGE), 1878, A., 554.
- modification of, by boiling (MAUMENÉ), 1876, i., 188.
- maximum density of a mixture of water and (KOHLEBAUSCH), 1878, A., 704.
- amounts of real acid contained in, of various densities (KOLB), 1874, 193.
- fuming, amount of sulphuric anhydride in (WINKLER), 1881, A., 1097.
- chemical equivalent of (MILLS and HOGARTH), 1880, A., 438.
- use of gas-carbon in the distillation of (RAOULT), 1875, 485.
- etherification of (VILLIERS), 1880, A., 796.
- freezing mixture of snow and (PFAUNDLER; WITZ), 1876, i., 867.
- action of, on acetylene (LAGERMARK and ELTEKOFF), 1877, ii., 583; 1879, A., 780; (ZEISEL), 1878, A., 653.
- action of *monohydrate*, on alcohols (BERTHELOT), 1876, ii., 59.

**Sulphuric acid** and hydrochloric acid,  
 action of, on alloys of lead and  
 antimony (V. DER PLANTZ),  
 1875, 428; 1876, i., 45.  
 action of, on amylene (FLAWITZKY),  
 1873, 369; (OSSIOFF), 1875, 577;  
 1876, i., 544.  
 action of, on substituted anilines  
 (SMYTH), 1875, 164.  
 action of fuming, on benzene-  
 sulphonic acid (BARTH and SEN-  
 HOFER), 1876, i., 585.  
 action of, on isobutaldehyde  
 (MARKOWNIKOFF), 1874, 144.  
 action of, on tricalcium phosphate  
 (ARMSBY), 1876, ii., 172.  
 action of, on chloral (GRABOWSKI),  
 1873, 578; 1874, 46.  
 action of strong, on cerulignone  
 and hydrocerulignone (FISCHER),  
 1875, 1021.  
 action of, on copper (PICKERING),  
 1878, T., 112; 1881, T., 401.  
 action of, on isodinaphthyl (SMITH  
 and POYNTING), 1874, 856.  
 action of dilute, on hydrobenzoin,  
 and isohydrobenzoin (BREUER  
 and ZINCKE), 1877, i., 460; 1878,  
 A., 320; 1880, A., 116.  
 action of nascent and occluded  
 hydrogen on (GLADSTONE and  
 TRIBE), 1879, T., 176.  
 action of, on lead (BAUER), 1875,  
 612; (MALLARD), 1875, 791.  
 and oxidising agents, action of, on  
 morphine and its salts (LINDO),  
 1877, ii., 906; 1878, A., 678.  
 action of, on naphthalene (STEN-  
 HOUSE and GROVES), 1876, ii.,  
 517.  
 and potassium dichromate, action  
 of, on narceine (BECKETT and  
 WRIGHT), 1876, i., 467.  
 behaviour of nitrogen peroxide  
 with (LUNGE), 1879, A., 770;  
 1880, A., 91, 440; 1882, A.,  
 1010, 1162.  
 of specific gravity 1.843, action of,  
 on certain salts (GARSIDE), 1875,  
 1287.  
 behaviour of silver chloride with  
 concentrated (SAUER), 1874, 335.  
 action of, on sugar (GROTE and  
 TOLLENS), 1874, 250, 566.  
 action of dilute, on trimethyl-  
 carbinol (BUTLEROFF), 1877, ii.,  
 874.  
 action of, on tin and on zinc (MUIR  
 and ROBES), 1882, A., 693.  
 aqueous, action of zinc on (MILLS),  
 1880, T., 454.

**Sulphuric acid**, reduction of, by  
 hydrogen (WARNER), 1873, 1002.  
 ammonia, a constant contaminant  
 of (STOKER), 1876, i., 879.  
 made from arseniferous pyrites  
 and the soda salts manufactured  
 therefrom, presence of arsenic in  
 (HJELT), 1878, A., 173.  
 removal of, from arsenic (THORX),  
 1876, i., 517; (V. WAGNER), 1876,  
 ii., 48, 122.  
 in beer (REISENBICHLER), 1882, A.,  
 556.  
 in wine. See Wine.  
 waste, improvements in treating,  
 that has been used for pickling  
 iron plates and other articles  
 of iron or steel (LAVENDER,  
 RICHARDS and WILLIAMS), 1879,  
 A., 423.  
 new hydrate of (WEBER), 1877, ii.,  
 164.  
 crystalline hydrates of (BERTHELLOT),  
 1874, 761.  
 hydrates, freezing temperatures of  
 (PFAUNDLER and SCHNEGG),  
 1876, i., 867.  
 dihydrated (PIERRE and PUCHOT),  
 1874, 770, 960.  
 influence of sulphur on the excre-  
 tion of, in urine (REGENSBURGER),  
 1877, ii., 911.  
 conjugated, in the urine (BAU-  
 MAXX), 1876, i., 726; ii., 212, 534.  
 standardising of (HARTLEY), 1873,  
 123.  
**Sulphates** (ETARD), 1878, A., 838;  
 1879, A., 104, 593.  
 occurring on the Bauersberg near  
 Bischofsheim (SINGER), 1881, A.,  
 369.  
 in lees (WARINGTON), 1875, 952.  
 formation of, by the decomposi-  
 tion of albumin in germinating  
 plants (SCHULZE), 1878, A., 909.  
 formation of, by gas flames  
 (PRIWOZNIK), 1875, 130.  
 anhydrous, heat of formation of  
 (THOMSEN), 1880, A., 82, 362.  
 amount of heat produced or ab-  
 stracted by the solution of certain  
 sulphates in water (THORPE and  
 WATTS), 1880, T., 117.  
 molecular volumes of (PETTERSSON),  
 1877, i., 267, 437.  
 volume-constitution of (SCHRÖDER),  
 1879, A., 768; 1881, A., 137.  
 action of hydrochloric acid on  
 metallic (HENSSEN), 1877, i.,  
 439; ii., 110; 1879, A., 105;  
 (PRESCOTT), 1877, ii., 840.



- Sulphates** of mono- and polyhydric alcohols and carbohydrates (CLAËSSON), 1879, A., 1033; 1880, A., 28.
- Sulphuric acid, detection and estimation:**—  
 detection of, in wine (NESSLER), 1878, A., 347; 1879, A., 981; (CASALI), 1881, A., 314.  
 analysis of a mixture of thiosulphates, sulphides, and (SCHLAGDENHAUFFEN), 1875, 910.  
 estimation, volumetric, of (FLEISCHER), 1873, 529; (BOHLIG), 1874, 815; (PELLER), 1877, i., 227; (FLEURY), 1878, A., 91; (PRECHT), 1880, A., 576; (GROSSMANN), 1880, A., 744; (ZIEGLER), 1882, A., 894.  
 estimation of, by barium chromate (HINMAN), 1878, A., 607.  
 estimation of free, in citric and tartaric acid liquors (WARINGTON), 1875, 941.  
 estimation of, in acid liquids (BRÜGELMANN), 1877, i., 737.  
 estimation of, in must and wine (ULBRICHT), 1880, A., 586.  
 estimation of, in urine (BAUMANN), 1878, A., 682.  
 estimation of, in vinegar (THRESH), 1876, i., 107; (YOUNG), 1877, ii., 917; (CASALI), 1881, A., 314.  
 estimation of, in waters (HEMPFEL), 1876, i., 742; (HAUBST), 1877, ii., 917; (HOUBEAU), 1878, A., 1006.  
 estimation of nitrogen compounds in the manufacture of (DAVIS), 1878, A., 605; 1880, A., 746; (MACTEAR), 1880, A., 745; (LUNGE), 1882, A., 774.
- Hyposulphurous acid** (SCHÜTZENBERGER), 1881, A., 976.  
 thermic researches on (BERTHELOT), 1876, ii., 473.
- Persulphuric acid** (BERTHELOT), 1878, A., 469; 1880, A., 607.  
 formation of (BERTHELOT), 1878, A., 372; 1878, A., 554.
- Thiosulphuric acid, constitution of** (BUNTE), 1874, 770.
- Thiosulphates, rotatory power of** (BICHAT), 1874, 227.  
 solution, constancy of (PICKERING), 1882, A., 424.
- Thiosulphuric acid, estimation of:**—  
 analysis of a mixture of sulphates, sulphides, and (SCHLAGDENHAUFFEN), 1875, 910.  
 estimation of, by iodine (MOHR), 1874, 288.
- Thiosulphuric acid, estimation of:**—  
 and sulphites, indirect estimation of (GROSSMANN), 1878, A., 1006.
- Thionic acids, characteristic reactions of** (SMITH and TAKAMATSU), 1880, T., 608.
- Dithionic acid, basicity of** (KOLBE), 1880, A., 5.  
 reaction of, with reagents (SMITH and TAKAMATSU), 1880, T., 608.
- Dithionates** (BAKER), 1878, A., 112.
- Trithionic acid, reaction of, with reagents** (SMITH and TAKAMATSU), 1880, T., 608.
- Trithionates** (BAKER), 1878, A., 112.
- Tetrathionic acid** (PFEIFFER), 1879, A., 1013; (SPRING), 1880, A., 215.  
 preparation of (SMITH and TAKAMATSU), 1880, T., 605.  
 and pentathionic acid, synthesis of, from the same materials (SMITH and TAKAMATSU), 1880, T., 604.  
 reaction of, with reagents (SMITH and TAKAMATSU), 1880, T., 608.
- Pentathionic acid** (STINGL and MORAWSKI), 1879, A., 1012; (PFEIFFER), 1879, A., 1013; (SMITH and TAKAMATSU), 1880, T., 592; 1882, T., 162; (KESSLER), 1880, A., 298; (LEWES), 1881, T., 68.  
 non-existence of (SPRING), 1880, A., 215, 367; 1882, A., 1262.  
 reactions of (SMITH and TAKAMATSU), 1880, T., 608; 1882, T., 164.
- Polythionic acids** (SPRING), 1874, 123; 1875, 129.  
 contained in Wackenroder's solution (CURTIUS), 1881, A., 1098.
- Thionic acids.** See also Wackenroder's solution.
- Sulphur phosphide, liquid** (SCHULZE), 1881, A., 72.
- Sulphur, detection and estimation:**—  
 detection of (ROSENFELD), 1877, i., 341; (BRUNNER), 1882, A., 553.  
 detection of, by the blowpipe (TOLLENS), 1873, 1160.  
 detection of, in organic compounds (VOHL), 1876, ii., 552; (ŠPICA), 1880, A., 348.  
 estimation of (SAUER), 1873, 939; 1874, 288; (MUCK), 1876, i., 742; (WEIDEL and v. SCHMIDT), 1877, ii., 798; (FAHLBERG and ILES), 1878, A., 1005; (ANON.), 1881, A., 940; (HARDING), 1882, A., 138.  
 estimation of, in bile (KÜLZ), 1873, 536.

**Sulphur, estimation:—**

- estimation of, in coal (ESCHKA), 1874, 1007; (STOCK), 1875, 383; (MORGAN), 1877, ii., 218; (NAKAMURA), 1879, T., 785; (ROLLET), 1879, A., 974; (DROWN), 1881, A., 645.
- estimation of, in coal gas (ANON.), 1876, ii., 657; (BRÜGELMANN), 1877, i., 492, 739, 741; (KNUBLAUCH), 1882, A., 1326.
- estimation of, in illuminating gas (POLECK and BIEFEL), 1879, A., 78.
- estimation of, in coke (ESCHKA), 1874, 1007; (STOCK), 1875, 383; (BRADBURY), 1878, A., 1005; (ROLLET), 1879, A., 974; (DROWN), 1881, A., 645.
- estimation of, in iron and steel. See under Iron.
- estimation of, in organic substances and in vegetable and animal compounds (BRÜGELMANN), 1876, i., 743; 1877, i., 739.
- estimation of available, in spent oxide (YARDLEY), 1875, 384.
- estimation of, in pyrites (HOLLAND), 1873, 530; (DEUTECOM), 1880, A., 744; (LUNGE), 1881, A., 193, 764; (BOECKMANN), 1882, A., 993.
- estimation of, in soda-lyes (LUNGE), 1882, A., 895.
- estimation of, in sulphur ores (MACAGNO), 1881, A., 845.
- estimation of, in sulphides (DROWN), 1881, A., 645.
- estimation of, in natural sulphides (COLSON), 1880, A., 139.
- Sulphur-baths**, observations on (DE CLERMONT and FROMMEL), 1880, A., 196.
- Sulphur springs**. See under Water.
- Sulphurea**. See Thiocarbamide.
- Sulphureabenzonic acid**. See Thiocarbonyldiamidodibenzoic acid.
- Sulphuretted hydrogen**. See Hydrogen sulphide under Sulphur.
- Sulphuric acid**. See under Sulphur.
- Sulphuric anhydride**. See Sulphur trioxide.
- Sulphuric chloride**. See Sulphonic acid, chloro.
- Sulphur-lyes** from soda-waste, decomposition of, by hydrochloric acid (LUNGE), 1878, A., 755.
- Sulphurous acid**. See under Sulphur.
- Sulphurous anhydride**. See Sulphur dioxide.
- Sulphurous water**. See Mineral Waters under Water.

**Sulphydrates**, characteristic colour reactions with (CLAËSSON), 1881, A., 646.

**Sumac**, occurrence of quercetin and quercitrin in (LOEWE), 1874, 171.

tannin of (LOEWE), 1874, 171; (MACAGNO), 1880, A., 732; 1881, A., 1085.

estimation of tannin in (MACAGNO), 1881, A., 1085.

**Sumac-extract** (ANON.), 1874, 722.

**Sun**, constitution of the (FIEVEZ), 1881, A., 955.

constitution of the, and dark lines of the solar spectrum (CORNU), 1878, A., 357.

absorption of chemically active rays in the atmosphere of the (VOGEL), 1873, 712.

spectrum of the, spectrum-analysis in connection with (LOCKYER), 1873, 340, 994; 1874, 495.

elements existing in the (LOCKYER), 1874, 424; 1878, A., 357; 1879, A., 575.

existence of carbon in the coronal atmosphere of the (LOCKYER), 1880, A., 429.

spectrum of iron in the (LOCKYER), 1881, A., 669, 957.

magnesium in the (TACCHINI), 1876, ii., 588.

oxygen in the (DRAPER), 1878, A., 101.

temperature of the (HIRN), 1874, 526.

See also Spectrum under Photochemistry.

**Sunflower** (*Helianthus annuus*). See under Agricultural Chemistry.

**Sunlight**. See under Photochemistry.

**Sunspots**, theory of (VICAIRE), 1873, 338.

**Superbin** (WARDEN), 1881, A., 104.

**Superfused substances**, application of the principle of dissimilar molecules to (PFAUNDLER), 1877, i., 435.

**Superphosphates**. See Manures under Agricultural Chemistry.

**Supersaturated solutions**. See Solutions, super-saturated.

**Surface addition**, influence of, in affecting the equilibrium of certain chemical systems (MUIR), 1879, T., 319.

**Surface forces** caused by the communication of heat (REYNOLDS), 1875, 329.

**Surfaces** of separation (BERTHELOT), 1882, A., 454.

**Surface-tension** of aqueous solutions of alcohols and fatty acids (DUCLAUX), 1878, A., 195.

**Surgical-dressings**, estimation of phenol in (SEUBERT), 1882, A., 106.

**Suspension**, solution, and chemical combination (DURHAM), 1878, A., 636.

**Svanbergite** (FISCHER), 1881, A., 991.

**Swallet**, composition of a, in the Empire Mine of the Luzerne Company (BAKER), 1876, i., 890.

**Sweat**. See Perspiration.

**Swedes**. See under Agricultural Chemistry.

**Swimming bladder**, relation between the composition of the air of the, and the depth at which the fish is captured (MOREAU), 1875, 375.

**Syenite** of Ditro (VOM RATH), 1877, ii., 172.

**Syenite granite** or hornblende granite from Sank Rapids and St. Cloud, Minnesota (STRENG and KLOOS), 1877, ii., 580, 723.

**Syenite-porphyrries** of South-West Norway (LIEBISCH), 1879, A., 362.

**Sylvane** (ATTERBERG), 1880, A., 663. action of hydrochloric acid on (ATTERBERG), 1880, A., 663.

**Sylvanite** (GENTH), 1875, 431; (SCHRAUF), 1879, A., 897. from Grand View Mine, Colorado (CLARKE), 1878, A., 383.

**Sylvestrene**. See Terpenes.

**Sylvite** (*sylvine*) from Stassfurt (KRAUSE), 1876, i., 346. See also Potassium chloride.

***Symphytum asperinum*** as a fodder (WILDT), 1880, A., 735.

**Synanthrene** (*phosene*) (BARBIER), 1874, 1091.

**Synanthrose**. See Levulin under Carbohydrates.

**Synaphy**. See Cohesion.

**Synaptase**. See under Enzymes.

**Syngenite** (VÖLKER), 1873, 254; (v. ZEPHAROVICH), 1874, 133. identity of, with kalusite (VRBA), 1873, 852.

**Syntonid** (DANILEWSKY), 1882, A., 75.

**Syntonin** (*acid albumin*) (MÜRNER), 1879, A., 489.

conversion of myosin into, and regeneration from the same (DANILEWSKY), 1882, A., 745.

relation of, to alkali albuminate (SOYKA), 1876, ii., 316.

See also Proteids.

**Syrups**. See Beet-juice, Beet syrup, and Sucrose, manufacture of, under Carbohydrates.

**Szaboite**. See Hypersthene.

**Szmikite**, a new manganous sulphate (v. SCHRÖCKINGER), 1878, A., 382. See also Manganous sulphate.

## T.

**Tabasheer** from Sumatra, composition of (ARMANN), 1878, A., 945.

***Tacca pinnatifida***, examination of (MOELLER), 1879, A., 860.

**Tachylite**, existence of a mineral analogous to, in a basalt of the environs of Royat (Pay-de-Dôme) (GONNARD), 1882, A., 292.

**Taiguic acid**. See Lapachol.

**Talc**, pseudomorphosis of, into angite (HELLAND), 1873, 356.

See also Magnesium silicate.

**Tallow**, to purify, and make generally useful (ANON.), 1873, 1071.

See also Fats.

***Tanacetum vulgare***, essential oil of (BRUYLANTS), 1878, A., 158, 512.

**Tanacetyl hydride**. See Tansol.

**"Tane-koji,"** preparation of (KORSCHULT), 1879, A., 413.

**Tangent compass**, new (MÜLLER), 1874, 220, 766.

**TANNIC ACIDS and TANNINS** (PAUL and KINGZETT), 1878, T., 217; (ETTI), 1878, A., 797.

origin of (CROSS and BEVAN), 1882, T., 106.

from various sources (JAHN), 1879, A., 248.

artificial (FREDA), 1879, A., 645; 1880, A., 122; (SCHIFF), 1879, A., 646; (CROSS and BEVAN), 1882, T., 109.

new process for extracting, by dialysis (KÖHLRAUSCH), 1881, A., 858.

extraction of, from wine (MACH), 1879, A., 1078.

improvements in the manufacture of materials containing (VEDOVA), 1879, A., 496.

nature and constitution of (SCHIFF), 1874, 267; 1875, 763, 1197; (FREDA), 1878, A., 672.

and allied substances, certain reactions with (JOHANSON), 1879, A., 160.

new reaction of, with alkalis (GRIESSMAYER), 1873, 95.

as an alkalimetric indicator (BACHMEYER), 1881, A., 946.

action of bromine on (STENHOUSE), 1874, 587; 1875, 9.

action of light and darkness on solutions of (LEEDS), 1880, A., 908.

## TANNIC ACIDS and TANNINS—

Neubauer's relation between the reducing action of oxalic acid and (COUNCLER and V. SCHROEDER), 1882, A., 1238.

in wine (MACAGNO), 1880, A., 775.

applications of (KOECHLIN), 1882, A., 787.

use of size containing, for fixing aniline colours (ANON.), 1873, 1276.

influence of, on vegetation (MERCDANTE), 1875, 905.

combination of, with vegetable tissue (MÜNTZ), 1877, ii., 350.

compounds of, with albuminoids (GIRGENSOHN), 1874, 192.

antimony salt of (RICHARDS and PALMER), 1879, A., 933.

**Algarovilla**, tannin of (EITNER), 1882, A., 908.

*Aralia spinosa*, tannin of (HOLDEN), 1881, A., 105.

**Catechuic and catechutannic acids** (LOEWE), 1875, 75.

**Digallic acid** (SCHIFF), 1874, 267; 1875, 763, 1197; 1879, A., 466, 646; 1880, A., 551.

formation of, and the nature of tannin (SCHIFF), 1878, A., 673.

preparation of (FIEDA), 1879, A., 645.

action of sulphuretted hydrogen on (SCHIFF), 1880, A., 551.

See also Gallotannic acid.

"**Flavin**" (OTR), 1873, 643, 959.

**Gallotannic acid** (LOEWE), 1873, 748; (PHIPSON), 1878, A., 982.

See also Digallic acid.

**Pentacetyl-gallotannic acid** (SCHIFF), 1874, 269.

**Gentian root**, tannin of (HAGER), 1877, ii., 351; (VILLE), 1877, ii., 897.

**Guarana**, tannic acid of (GREENE), 1877, ii., 897.

**Hops**, tannin of (ETTI), 1876, i., 927; (BISSELL), 1878, A., 328.

**Igasuric acid** (LUDWIG), 1873, 904.

*Ilex paraguayensis*, tannin of (ARATA), 1878, A., 581.

**Oak, elm and willow barks**, tannins of the (JOHANSON), 1877, i., 720.

**Oak-tannic acid** (OSER), 1876, ii., 88; (ETTI), 1881, A., 277; (LOEWE), 1881, A., 901.

influence of soil on (FLEISCHER), 1880, A., 920.

sugar from (BÜTTINGER), 1881, A., 1021; 1882, A., 157.

**Enotannin** (GAUTIER), 1877, ii., 897.

## TANNIC ACIDS and TANNINS—

**Enotannin**, estimation of, in wine (JEAN), 1882, A., 430, 1137.

*Persca Lingue*, tannin of (ARATA), 1881, A., 600.

**Quebrachitannic acid** (JEAN), 1877, ii., 897; (ARATA), 1881, A., 1152.

**Quebracho**, tannin of (ANON.), 1879, A., 996.

**Sumac**, tannic acid of (LOEWE), 1874, 171; (MACAGNO), 1880, A., 732; 1881, A., 1085.

**Sumac extract**, tannin of (ANON.), 1874, 722.

**Tannin estimation** (MÜNTZ and RAMSPACHER; SCHMIDT), 1874, 1183; (PRUD'HOMME), 1875, 1054; (SIMP-KINS), 1876, i., 113; (THOMSON), 1876, i., 774; (JEAN), 1876, ii., 117; (PROCTER), 1876, ii., 554; 1877, ii., 807; (LÖWENTHAL), 1877, i., 745; 1881, A., 473; (PAUL and KINGZETT), 1878, T., 217; (KATHREINER), 1878, A., 612, 687; (RICHARDS and PALMER), 1879, A., 933; (SIMAND), 1882, A., 1237. apparatus for estimating the, contained in the various astringent substances used in tanneries (TERRELL), 1874, 836.

estimation of, in tea (EDER), 1878, A., 918; (HILL), 1881, A., 1176.

estimation of, in the must of the grape and in wine (PAVESI and ROTONDI), 1875, 178.

estimation of, in wines (CARPENÉ), 1875, 1054; (JEAN), 1882, A., 780.

See also Catechins, Catechu and Colouring matters.

**Tanning** (GOTTFRIEDSEN), 1879, A., 100; (SADLON), 1881, A., 481, 1186.

use of sodium sulphide in (EITNER), 1876, i., 982.

influence of the constituents of waters on (EITNER), 1878, A., 259.

mineral (GOTTFRIEDSEN), 1879, A., 100; (HEINZERLING), 1880, A., 427.

**Tanning-liquors**, estimation of free acid in (PROCTER), 1879, A., 980.

**Tansy**, oil of, and tansol (*hexacetyl hydride*) (BRUYLANTS), 1878, A., 157, 512.

**Tantalates** (JOLY), 1876, i., 46.

American, composition of some (COMSTOCK), 1880, A., 531.

**Tantalite** from Coosa Co., Alabama (SMITH), 1878, A., 652.

from Yancey Co., North Carolina (KÖNIG), 1877, ii., 281.



- Tantalum carbide and nitrides** (JOLY), 1876, ii., 277.  
 oxyfluoride (JOLY), 1876, i., 883.
- Tantalum-group, metals of the** (HERMANN), 1877, ii., 166.
- Tapalpite** (BURKART), 1874, 551.
- Taper**, lecture experiment to show the increase of weight by burning a (MEYER), 1877, i., 437.  
 green, arsenic in (CHURCH), 1877, ii., 922.  
 estimation of water in, by means of Pettenkofer's respiration apparatus (v. VOIT and FORSTER), 1876, i., 960.
- Tar**, animal, compounds from (WEIDEL), 1880, A., 267; (WEIDEL and CIAMICIAN), 1880, A., 403.  
 coal. See Coal tar.  
 from cork (BORDET), 1881, A., 1040.
- Tar distilleries, extinguishing fire in** (SMITH), 1879, A., 1080.
- Tarapacaite** (DOMEYKO), 1882, A., 471.
- Taraxacum root** (BARNES), 1880, A., 720.
- Tarchonanthus camphoratus** (CANZONERI and SPICA), 1882, A., 1040.
- Tarchonyl alcohol** (CANZONERI and SPICA), 1882, A., 1041.
- Tarconic acid** (v. GERICHTEN), 1882, A., 869.
- Tarconine** (WRIGHT), 1877, ii., 541.  
 compound of, with thallium iodide (JÖRGENSEN), 1873, 476.  
 bromo-, and its salts and reactions (WRIGHT), 1877, ii., 541; (v. GERICHTEN), 1882, A., 313, 869.
- Tarnine and its hydrobromide** (v. GERICHTEN), 1881, A., 446; 1882, A., 870.
- Tartar**. See Tartaric acid, potassium hydrogen salt of.
- Tartar emetic**. See Tartaric acid, potassium antimony salt of.
- d-Tartaric acid** (*dihydroxysuccinic acid*) from *Leptomeria acida* (*Australian currant*) (RENNIE), 1881, A., 1033.  
 formation of, from ethylene (JUNGFLEISCH), 1873, 743.  
 preparation of pure (FICINUS), 1879, A., 917.  
 chemistry of (WARINGTON), 1875, 925.  
 rotatory power of, in aqueous solution (LANDOLT), 1881, A., 257.  
 and the tartrates, relations between the molecular rotatory power of (LANDOLT), 1874, 41.  
 heat of solution of (BERTHELOT and JUNGFLEISCH), 1874, 763.
- d-Tartaric acid** (*dihydroxysuccinic acid*), contraction of, on dilution (WARINGTON), 1875, 942.  
 solubility of the different modifications of, in water (LEIDIE), 1882, A., 1191.  
 dry distillation of (BÜTTINGER), 1876, ii., 286; (LIEBERMANN), 1882, A., 948.  
 action of, on calcium carbonate (GROSJEAN), 1877, ii., 647.  
 action of, on eodine (BECKETT and WRIGHT), 1875, 695.  
 action of dehydrating agents on (ERLENMEYER), 1881, A., 417.  
 behaviour of phosphates of iron and aluminium in (WARINGTON), 1875, 993.  
 oxidation of, by silver oxide in ammoniacal solution (CLAUS), 1876, i., 65.  
 use of, in solutions of magnesia (LÉGER), 1874, 97.  
 formation of glycollic and pyruvic acids from (BOUCHARDAR), 1879, A., 916.  
 conversion of, into racemic acid (JUNGFLEISCH), 1873, 166; 1878, A., 138.  
 preparation of succinic acid from, by fermentation (KÖNIG), 1881, A., 256; 1882, A., 715.  
 derivatives of (ANSCHÜTZ), 1882, A., 830.  
 preparation of the ethereal salts of (ANSCHÜTZ and PICTET; ANSCHÜTZ), 1880, A., 876.  
 metallic salts of, effect of, on fungus (WARINGTON), 1875, 968.  
 double, action of the constituents on supersaturated solutions of (THOMSON and BLOXAM), 1882, T., 385.  
 in solution, action of hydrochloric acid on (THOMAS), 1878, T., 374.  
 ammonia in (HOLDERMANN), 1878, A., 92.  
 ammonio-ferric salt of (MÉHU), 1874, 43.  
 calcium salt of, fermentation of (FITZ), 1879, A., 664.  
 water retained by, at 100° (WARINGTON), 1875, 945.  
 analysis of (WARINGTON), 1875, 946.  
 estimation of, in tartars (SCHEURER-KESTNER), 1878, A., 687, 810.  
 iron salt of (MÉHU), 1874, 42.  
 potassium salt of, estimation of, in wine (AMTHOR), 1882, A., 1236.

- d*-Tartaric acid (*dihydroxy succinic acid*), potassium antimony salt of (*tartar emetic*), and its compounds (CLARKE), 1882, A., 1051. constitution of (CLARKE and STALLO), 1881, A., 156. potassium hydrogen salt of (*tartar ; cream of tartar*), its properties and reactions (WARINGTON), 1875, 942. in must and wine (MACH), 1880, A., 774. in wines (BUCHNER), 1878, A., 822; (NESSLER and WACHTER), 1880, A., 775. precipitation of (GROSJEAN), 1879, T., 349. indirect methods of analysing (WARINGTON), 1875, 959. analysis of (SCHEURER-KESTNER), 1878, A., 687, 810. estimation of tartaric acid in (CARLES), 1882, A., 1329. See also Argol. potassium sodium salt of (*Rochelle salt*), influence of, on the activity of yeast (HAYDICK), 1881, A., 1058. silver salt of, action of iodine on the (BIRNBAUM and GAIER), 1880, A., 801. silver antimony salt of (*silver emetic*) (COOKE), 1881, A., 419; 1882, A., 389. tellurium salt of (BECKER), 1876, ii., 45. yttrium salt of (CLEVE and HÖGLUND), 1873, 138.
- d*-Tartaric acid, analysis of (SCHEURER-KESTNER), 1878, A., 687, 810. titration of (WARINGTON), 1875, 942. test for (FENTON), 1881, A., 655. test to distinguish, from citric acid (CAILLETET), 1879, A., 674. detection of, in wine (NESSLER), 1879, A., 981; (NESSLER and BARTH), 1882, A., 1000. direct method of estimating (WARINGTON), 1875, 972. estimation of, and citric acid (FLEISCHER), 1874, 1181. estimation of, in lees and inferior argol (GROSJEAN), 1879, T., 341. estimation of, in tartar and in wine lees (CARLES), 1882, A., 1329. direct estimation of, in tartaric liquors (WARINGTON), 1875, 976. estimation of, in wine (ANTHOR), 1882, A., 1236.
- l*-Tartaric acid, formation of, from ethylene (JUNGFLEISCH), 1873, 743. heat of solution of (BERTHELOT and JUNGFLEISCH), 1874, 763.
- i*-Tartaric acid (*mesotartaric acid*) (TANATAR), 1880, A., 875; (KÉKULÉ and ANSCHÜTZ), 1881, A., 714. reciprocal transformation of racemic acid and (JUNGFLEISCH), 1873, 270. heat of solution of (BERTHELOT and JUNGFLEISCH), 1874, 763.
- meta*Tartaric acid, qualitative reactions of (WARINGTON), 1875, 943.
- para*Tartaric acid. See Racemic acid.
- Tartaric liquors, nature of (WARINGTON), 1875, 976. search for tartaric, racemic and oxalic acids in (WARINGTON), 1875, 988.
- Tartaric and citric solutions, containing aluminium, iron and phosphates, behaviour of chalk to (WARINGTON), 1875, 990.
- Tartrantimonates. See Tartaric acid, potassium antimony salt of.
- Tartronamic acid (MENSHUTKIN), 1876, ii., 626; 1877, ii., 323.
- Tartronic acid (*hydroxymalonic acid*) and its salts (PINNER), 1876, i., 65; (GRIMAUX), 1877, ii., 740; (DEMOLE), 1878, A., 34; (PETRIEFF), 1878, A., 490; (CONRAD and BISCHOFF), 1880, A., 629; 1882, A., 39; (BÖTTINGER), 1881, A., 714. from glycerol (CAMPANI and BIZZARRI), 1881, A., 256; 1882, A., 818. new formation of (SADTLER), 1876, i., 566. preparation of (PETRIEFF), 1878, A., 490. crystalline forms of (PANEBIANCO), 1882, A., 1187.
- Taurine (*amidothiansulphonic acid*) (ENGEL), 1876, ii., 72; (JAMES), 1879, T., 810. oxidation of (GUARESCHI), 1878, A., 860. decomposition of, in the digestive process (CÉCH), 1878, A., 82. colour reactions of (ENGEL), 1876, i., 943. salts of (LANG), 1876, ii., 533; 1877, i., 481.
- Taurocarbamic acid (SALKOWSKI), 1873, 1129; 1874, 148.
- Taurocholic acid, estimation of, in bile (KÜLZ), 1873, 536.
- Taurocyamine (DITTRICH), 1879, A., 226.
- Tayuya (*Trianosperma ficifolia*) (ANON.), 1876, i., 431; (PARODI), 1880, A., 721.
- Taxine, an alkaloid from the yew tree (MARNÉ), 1877, i., 476; (AMATO and CAPPARELLI), 1880, A., 899.

- Taxus baccata*. See Yew tree.
- Taznite** (DOMEYKO), 1881, A., 998.
- Tea** (WANKLYN), 1874, 86; (WIGNER), 1876, i., 424.  
 composition of various (WILSON), 1874, 391.  
 average composition per cent. of (EDER), 1879, A., 856.  
 composition of genuine black (BLYTH), 1875, 385.  
 Bohemian, composition of (BĚLOHOUBEK), 1881, A., 131.  
 from Cachar, composition of (HODGES), 1875, 181.  
 from China, examination of (EDER), 1879, A., 851.  
 nitrates in (BING), 1881, A., 122.  
 from *Cyclopia Vogelii*. See Cape tea.  
 from *Ilex paraguayensis*. See Paraguay tea.  
 from Thea, composition of (GREENISH), 1881, A., 443.  
 composition of the ash of various (WIGNER), 1874, 1106.  
 influence of, on the excretion of urea (ROUX), 1873, 1152; (RABUTEAU), 1873, 1248.  
 presence of cinnamic acid in (WEPPE), 1875, 388.  
 examination of (HUSSON), 1879, A., 558.  
 detection of adulterations in (ALLEN), 1874, 191; 1875, 786.  
 detection of iron salts in (EDER), 1879, A., 854.  
 estimation of caffeine (*theine*) in (LIEVENTHAL), 1873, 411; (WEYRICH), 1873, 1264; (SCHWARZ), 1876, i., 778; (COMMAILLE), 1876, i., 779; (MARKOWNIKOFF), 1877, i., 110; (BLYTH), 1877, ii., 517.  
 test for catechu and logwood in (EDER), 1879, A., 854.  
 estimation of tannin in (EDER), 1878, A., 918; (HILL), 1881, A., 1176.  
 See also under Agricultural Chemistry.
- Tea-soils** from Cachar, composition of (HODGES), 1875, 181.  
 from India, composition of (BROWN), 1875, 1217.
- Teak**, composition of (THOMS), 1878, A., 1000; 1879, A., 996.
- Tectochrysin**. See Methylchrysin.
- Telephone**, application of, to the estimation of resistance in galvanic circuits and batteries (LESS), 1882, A., 789.
- Telluric acid**. See under Tellurium.
- Telluric bismuth**. See Tetradyomite.
- Telluric silver**. See Hessite.
- Tellurite** (GENTH) 1878, A., 709.
- Tellurium**, atomic weight of (WILLS), 1879, T., 704.  
 preparation of (v. SCHRÖTTER), 1873, 475; (WILLS), 1879, T., 704.  
 vapour-density of (SAINTE-CLAIRE DEVILLE and TROOST), 1880, A., 847.  
 affinity of oxygen for (THOMSEN), 1873, 1191.  
 behaviour of, with sulphuric anhydride and with sulphuric acid (WEBER), 1882, A., 804.  
 solubility of, in sulphuric acid (HILGER), 1874, 654.  
 oxidation of, by aqua regia and by nitric acid (WILLS), 1879, T., 708.  
 conversion of, into tellurium dioxide (WILLS), 1879, T., 709.
- Tellurium compounds** (BECKER), 1876, ii., 45.
- Tellurium potassium bromide** (WILLS), 1879, T., 711.
- tetrafluoride** (HÖGBOM), 1881, A., 223.
- potassium, barium and ammonium fluorides** (HÖGBOM), 1881, A., 223.
- tellurides, metallic** (MARGOTTET), 1877, ii., 570.
- arsenic oxide** occurring with arsenical iron pyrites (HANNAY), 1873, 989.
- dioxide** (*tellurous oxide*; *tellurous anhydride*) (WILLS), 1879, T., 708.  
 action of halogen acids on (DITTE), 1876, ii., 606; 1877, i., 45.
- tellurous acid**, reduction of, by grape sugar (STOLBA), 1874, 709, 872.  
 detection of selenious acid and (HILGER), 1875, 103.
- telluric acid** (BECKER), 1876, ii., 45.  
 action of heat on (WILLS), 1879, T., 709.  
 reduction of, by grape-sugar (STOLBA), 1874, 709, 872.
- sulphides** (BECKER), 1876, ii., 45.
- Tellurium mineral**, a new (HANNAY), 1873, 989.  
 from California (BURKART), 1874, 32.  
 recently discovered in Chili (DOMEYKO), 1876, i., 349.  
 of Colorado (SILLIMAN), 1875, 136; (GENTH), 1878, A., 383.  
 in Japan (DIVERS), 1882, A., 362.  
 of Nagyag, working of (v. SCHRÖTTER), 1873, 1003; 1874, 654.  
 from North America (GENTH), 1875, 429.  
 of Siebenbürgen, Transylvania (SCHRAUF), 1879, A., 897.  
 in the United States (BURKART), 1874, 31, 551.

- Tellurium, detection and estimation:**—  
 testing for, in ores (KÜSTEL), 1874, 709.  
 estimation of, by grape- and invert-sugars (KASTNER), 1876, i., 440.
- Tellurous acid.** See under Tellurium.
- Tellurous anhydride and oxide.** See Tellurium dioxide.
- Tellursilberblende,** a new species (SCHRAUF), 1879, A., 898.
- Temperature.** See under Thermochemistry.
- Tendons,** distribution of phosphates in (JOLLY), 1880, A., 275.
- Tephroite** from Långban in Sweden (PISANI), 1877, ii., 851.  
 See also Manganese silicate.
- Teraconic acid and its salts** (FITTIG and GEISLER), 1882, A., 41; (ROSER), 1882, A., 716.
- Teracrylic acid and its salts** (FITTIG), 1877, ii., 432; (KRAFFT), 1878, A., 28; (FITTIG and KRAFFT), 1882, A., 42; (ANTHOR), 1882, A., 44.
- Terbium,** and its compounds (DELA-FONTAINE), 1879, A., 114.  
 spectrum of (ROSCOE and SCHUSTER), 1882, T., 283.  
 oxide (*terbia*) (MARIGNAC), 1879, A., 113; (CLEVE), 1879, A., 602.  
 sulphate (MARIGNAC), 1879, A., 114.
- Terebangelene** (NAUDIN), 1882, A., 411.
- Terebene and terebenthene.** See under Terpenes.
- Terebic acid** (WILLIAMS), 1874, 70; (ROSER), 1882, A., 716.  
 constitution of (FITTIG and MIELCK), 1874, 888.  
 $\alpha$ -chloro- (ROSER), 1882, A., 717.
- Terebilic acid** (ROSER), 1882, A., 717.
- Terecamphene.** See *l*-Camphene under Terpenes.
- Terecuminlaldehyde** (ETARD), 1881, A., 582.
- Terelactone** (FITTIG and GEISLER), 1882, A., 42.
- Terephthalaldehyde** (GRIMAUX), 1877, i., 206.
- Terephthalic acid** (*p-phthalic acid*) (BRUYLANTS), 1878, A., 158; (FISCHLI), 1879, A., 638.  
 from *p*-benzenedisulphonic acid (FITTIG), 1875, 366; (MEYER and MICHLER), 1875, 1026.  
 formation of, from the two sulphonic acids which yield resorcinol (MEYER), 1875, 259.  
 formation of, from *p*-sulphobenzoic acid (REMSSEN), 1876, i., 258.
- Terephthalic acid** (*p-phthalic acid*), formation of, by the action of sodium formate on benzoic acid (v. RICHTER), 1873, 1238.  
 obtained by oxidation of oil of turpentine, lemon, &c., probably derived from cymene pre-existing in the oils (WRIGHT), 1873, 552.  
 bromo- (FISCHLI), 1879, A., 639.  
 2:5-dibromo-, and its salts (CLAUS and WIMMEL), 1880, A., 632.  
*dithio*- (SCHREDER), 1871, 990.
- Terephthalic chloride, bromo-** (FISCHLI), 1879, A., 639.
- TERPENES AND THEIR DERIVATIVES** (WRIGHT), 1873, 549, 686; 1874, 317; (WRIGHT and LAMBERT), 1874, 619; (OPPENHEIM and PFAFF), 1874, 891; (BECKETT and WRIGHT), 1876, i., 1; (ARMSTRONG and TILDEN), 1879, T., 734.  
 from the essential oil of the fruit of the *Angelica Archangelica* (NARDIN), 1882, A., 410; (MÜLLER), 1882, A., 497; (BEILSTEIN and WIEGAND), 1882, A., 1300.  
 from bergamot (TILDEN and SHENSTONE), 1877, i., 560.  
 from calamus root (KURBATOFF), 1874, 259; 1875, 90.  
 from coriander oil (GROSSER), 1882, A., 525.  
 from cubeb oil (SCHULZE), 1873, 1148; (OGLIALORO-TOVARO), 1876, ii., 642; (SCHMIDT), 1877, ii., 344.  
 from "Dekamali" resin and from *Gardenia lucida* (STENHOUSE and GROVES), 1879, T., 691.  
 from ginger (THRESE), 1882, A., 626.  
 from lemon (OPPENHEIM), 1873, 1226; (TILDEN and SHENSTONE), 1877, i., 560; (TILDEN), 1879, A., 386.  
 from marjoram oil (BRUYLANTS), 1880, A., 50.  
 from nutmeg oil, cymene from the dibromide of (WRIGHT), 1873, 693.  
 from parsley oil (v. GERICHTEN), 1876, ii., 78.  
 from *Pinus sylvestris* (TILDEN), 1878, T., 80; (FLAWITZKY), 1879, A., 168.  
 from sage oil (TILDEN and SHENSTONE), 1877, i., 557; (SUGIRA and MUIR), 1878, T., 293; (MUIR), 1880, T., 682.  
 from essential oil of savin (TILDEN and SHENSTONE), 1877, i., 560.  
 from French turpentine oil, changes produced by hydration and dehydration in (FLAWITZKY), 1879, A., 726; 1880, A., 264, 402.



## TERPENES and THEIR DERIVATIVES—

from essence of tansy (BRUYLANTS), 1878, A., 158, 512.

from Swedish wood-tar (ATTERBERG), 1878, A., 79.

structure of (FLAWITZKY), 1879, A., 167.

constitution of (TILDEN), 1878, T., 83.

spectra of (HARTLEY and HUNTINGTON), 1880, A., 201; 1881, A., 957; 1882, A., 130.

action of gaseous hydrochloric acid on (ARMSTRONG and TILDEN), 1879, T., 754; (TILDEN), 1879, A., 943.

action of phosphorus pentasulphide on (WRIGHT), 1874, 620.

action of sulphuric acid of various degrees of concentration on (ARMSTRONG and TILDEN), 1879, T., 734.

hydration of (FLAWITZKY), 1879, A., 726; 1880, A., 264, 402.

oxidation of, by air (KINGZETT), 1876, i., 243.

cymene from (KEKULÉ), 1873, 889; (FAUST and HOMEYER), 1875, 371; (BRUYLANTS), 1878, A., 158; (BRUÈRE), 1881, A., 39; (NAUDIN), 1882, A., 608.

examination of, for cymene by means of the ultra-violet spectrum (HARTLEY), 1880, T., 676.

relation of, to camphor (TILDEN), 1878, T., 88.

compounds of, with hydrochloric acid (ARMSTRONG and TILDEN), 1879, T., 734; (TILDEN), 1879, A., 943.

nitroso-, isomeric (TILDEN and SHENSTONE), 1877, i., 554.

nitrosoclorides of, preparation of (TILDEN and SHENSTONE), 1877, i., 554.

in the organism, behaviour of (V. DEN VELDEN and BAUMANN), 1877, i., 487.

**Australene** (*d-pinene*), formula of (FLAWITZKY), 1879, A., 168.

nitroso- (TILDEN and SHENSTONE), 1877, i., 556.

**l-Camphene** (*tercecamphene*) (KACHLER), 1878, A., 512; (TILDEN), 1879, A., 944.

**i-Camphene**, and its reactions (ARMSTRONG and TILDEN), 1879, T., 743; (LETTS), 1880, A., 669.

hydrochloride, melting point of (ARMSTRONG and TILDEN), 1879, T., 744.

## TERPENES and THEIR DERIVATIVES—

**Camphene** (*borneocamphene*) (RIBAN), 1876, i., 245; (KACHLER), 1878, A., 512; 1879, A., 1040; (DE MONTGOLFIER), 1878, A., 901; (SPITZER), 1879, A., 168; (KACHLER and SPITZER), 1880, A., 324.

**Camphenes** (RIBAN), 1875, 1192; 1876, i., 245.

obtained from borneol and from camphor, relations of (KACHLER and SPITZER), 1880, A., 324.

formula of (FLAWITZKY), 1879, A., 167.

**Camphoterebene** (BALLÓ), 1879, A., 540.

**Caoutchene**. See Dipentene.

**Carvene**. See *d*-Limonene.

**Cedrene** from sage (MUIR), 1880, T., 679.

**Cinene**. See Dipentene.

**Citrene**. See *d*-Limonene.

**Colophene**, its nature and reactions (ARMSTRONG and TILDEN), 1879, T., 733.

hydride (LETTS), 1880, A., 669.

**Dihydrocamphenes** (LETTS; KACHLER and SPITZER), 1880, A., 669.

**Dipentene** (*caoutchene*; *cinene*; *i-limonene*; *diisoprene*) and terpene, identity of the hydrates of (BOUCHARDAT), 1879, A., 1039.

**Eterpene** (*ethylterpene*) (MEYER and SPITZER), 1876, ii., 515; (MEYER and PETRI), 1877, ii., 626; (SPITZER), 1877, ii., 789.

**Ethylcamphene** (SPITZER), 1879, A., 168.

**Gaultherylene** (BIEDERMANN), 1876, i., 704.

**Hesperidene**. See *d*-Limonene.

**Laurene** (DE MONTGOLFIER), 1878, A., 899.

**Licarene** (MORIN), 1882, A., 737.

***d*-Limonene** (*citrene*; *hesperidene*) (TILDEN), 1879, A., 386.

from caraway (TILDEN and SHENSTONE), 1877, i., 560.

refractive power of (GLADSTONE), 1873, 972.

action of hydriodic and nitric acids on (WRIGHT), 1873, 556.

oxidation of, by air (KINGZETT), 1876, i., 243.

oxidation of, by chromic acid (WRIGHT), 1873, 553.

diibromide, cymene from (WRIGHT), 1873, 691.

**Menthene** and the action of hydriodic and nitric acids on (MORIYA), 1881, T., 81; (ATKINSON and YOSHIDA), 1882, T., 53.

## TERPENES and THEIR DERIVATIVES—

- Olibene** (KURBATOFF), 1875, 90.  
**Sylvestrene** (ATTERBERG), 1878, A., 79; (FLAWITZKY), 1879, A., 168.  
 from *Pinus pumilio* (ATTERBERG), 1882, A., 410.  
 from Russian turpentine oil (TILDEN), 1878, T., 82.  
**Terebangelene** (NAUDIN), 1882, A., 411.  
**Terebene** (RIBAN), 1873, 1137.  
 nature of (ARMSTRONG and TILDEN), 1879, T., 733.  
 preparation of (ARMSTRONG and TILDEN), 1879, T., 734, 737.  
 alleged synthesis of (LUGININ), 1873, 383.  
 and terebenthene, physical properties of (RIBAN), 1874, 580.  
 hydrochloride (RIBAN), 1874, 153.  
 melting point of (ARMSTRONG and TILDEN), 1879, T., 744.  
 action of alcoholic solution of potassium hydroxide on (ARMSTRONG and TILDEN), 1879, T., 744.  
 crude, examination of (ARMSTRONG and TILDEN), 1879, T., 742.  
**Terebenthene** (RENARD), 1882, A., 738.  
 from *Pinus pumilio* (ATTERBERG), 1882, A., 410.  
 formula of (FLAWITZKY), 1879, A., 168.  
 electrolysis of (RENARD), 1880, A., 479.  
 action of chromyl dichloride on (ETARD), 1881, A., 583.  
 derivatives of (DE MONTGOLFIER), 1879, A., 328.  
 mercury chloride (MAUMENÉ), 1881, A., 1021.  
 dichloride, action of zinc-dust on (NAUDIN), 1882, A., 608.  
 dihydrochloride, action of sodium on (DE MONTGOLFIER), 1879, A., 944.  
 hydrate (RENARD), 1880, A., 478; (FLAWITZKY), 1880, A., 559.  
 hydrochlorides (PAPASOGLI), 1877, i., 593; (DE MONTGOLFIER), 1879, A., 328; (FLAWITZKY), 1881, A., 437.  
 nitroso- (TILDEN and SHENSTONE), 1877, i., 556.  
*l*-Terebenthene from French turpentine oil, and the action of alcohol and sulphuric acid on (FLAWITZKY), 1880, A., 559.  
*iso*Terebenthene (RIBAN), 1874, 1162; (ARMSTRONG and TILDEN), 1879, T., 755.

## TERPENES and THEIR DERIVATIVES—

- iso*Terebenthene, physical properties of (RIBAN), 1875, 62.  
**Terebenthenes** (FLAWITZKY), 1881, A., 437.  
**Terecamphene**. See *l*-Camphene.  
**Terpene** and dipentene, identity of the hydrates of (BOUCHARDAT), 1879, A., 1039.  
 hydrochloride (FLAWITZKY), 1880, A., 403.  
 action of sodium on (LETTS), 1880, A., 669.  
 dihydrochloride (FLAWITZKY), 1880, A., 403.  
 hydrochlorides (TILDEN), 1879, A., 943.  
 chloro- (MEYER and SPITZER), 1876, ii., 514.  
 nitroso-, crystallographic characters of (MASKELYNE), 1875, 518.  
*l*-*iso*Terpene and its dihydrochloride (FLAWITZKY), 1880, A., 403.  
**Terpinene** (ARMSTRONG and TILDEN), 1879, T., 745.  
 synthesis of (BOUCHARDAT), 1875, 1259.  
 nature of (ARMSTRONG and TILDEN), 1879, T., 733.  
 mono- and di-hydrochlorides (ARMSTRONG and TILDEN), 1879, T., 746.  
**Terpinene** (WALITZKY), 1882, A., 411.  
**Terpinylene** (TILDEN), 1878, T., 251; 1879, A., 944.  
**Tetraterebenthene**, a solid polymeride of essence of turpentine (RIBAN), 1875, 61.  
**Terpene oxidised compounds**:—  
**Absinthol** from wormwood oil, and its reactions (WRIGHT), 1874, i., 319; (BEILSTEIN and KUPFER), 1874, 153.  
**Borneol**. See Borneol.  
**Camphor**. See Camphor.  
 peppermint. See Menthol.  
**Carvol** (KEKULÉ and FLEISCHER), 1874, 65; (FLÜCKIGER), 1876, ii., 643.  
*l*-Carvoxime (*nitrosohesperidene*) (TILDEN and SHENSTONE), 1877, i., 558.  
**Cineol** (*cajeputol*; *cyncol*; *eucalyptol*) (FAUST and HOMER), 1874, 475.  
**Citronellal**, reactions of (WRIGHT), 1874, 319.  
**Eucalyptol**. See Cincol.  
**Menthol** (*peppermint camphor*) and some of its derivatives (MORIYA), 1881, T., 77; (ATKINSON and YOSHIDA), 1882, T., 49.

**Terpene oxidised compounds:—**

- Menthol** (*peppermint camphor*) from Japan (BECKETT and WRIGHT), 1876, i., 1.  
 action of hydriodic acid on (ATKINSON and YOSHIDA), 1882, T., 54.  
 action of nitric acid, of bromine, and of dehydrating agents on (MORIYA), 1881, T., 77.  
 etherification of (MENSCHUTKIN), 1882, A., 817.  
 sodium derivative, action of cyanogen on (ARTH), 1882, A., 1213.  
 carbonate and urethane (ARTH), 1882, A., 1213.
- Menthone** (ATKINSON and YOSHIDA), 1882, T., 50.
- Myristicol**, refractive power of (GLADSTONE), 1873, 972.  
 composition and properties of (WRIGHT), 1873, 550.  
 action of phosphorus pentachloride and of zinc chloride on (WRIGHT), 1873, 687, 689.
- Styrocamphe** (VAN'T HOFF), 1876, i., 703; 1877, i., 214, 478.
- Terpin** (TILDEN), 1878, T., 247; 1879, T., 286; (WALITZKY), 1882, A., 411.  
 action of dilute hydrochloric and sulphuric acids on (TILDEN), 1878, T., 248.  
 oxidation products of (HEMPEL), 1875, 632; 1876, i., 921.  
 hydrate, oxidation of (TILDEN), 1878, T., 87.
- Terpinol** (TILDEN), 1878, T., 247; 1879, T., 287; A., 944.  
 action of sulphuric acid on (TILDEN), 1879, T., 289.  
*dihydrochloride* (TILDEN), 1878, T., 249; 1879, T., 288.  
 hydrate, *laevorotatory* (FLAWITZKY), 1880, A., 402.
- Terpinols**, natural (TILDEN), 1879, T., 289.
- Terpenes**. See also Oils, vegetable.
- Terpenylic acid** (FITTIG and KRAFFT), 1882, A., 42; (ANTHOR), 1882, A., 44.  
 a product of the oxidation of turpentine (HEMPEL), 1875, 762.  
 products of the dry distillation of (ANTHOR), 1882, A., 44.
- Test papers** (MOHR), 1874, 1098.
- Tetanus**, influence of, on the acids contained in muscle (WARREN), 1882, A., 539.
- Tetrabenzethylenedihydroxylamine** (*ethylenedibenzhydroxamate*) (EISELER), 1875, 768.
- Tetrabenzoylhydrogallein** (v. BUCHKA), 1882, A., 61.
- Tetrabenzoylmorphine**, action of benzoic anhydride and of water on (BECKETT and WRIGHT), 1875, 24.  
*ethiodide* (BECKETT and WRIGHT), 1875, 322.
- Tetrabenzylphosphonium chloride** and its salts (LETTS and COLLIE), 1881, A., 722.  
 examination of the residues from the preparation of (LETTS and COLLIE), 1882, A., 725.  
 salts (LETTS and COLLIE), 1882, A., 724.  
 action of haloid compounds of hydrocarbon radicles on (LETTS and COLLIE), 1881, A., 722.
- Tetrabutylammonium iodide**. See Tri-butylamine butyl iodide.
- Tetrabutylmorphine**, action of water on (BECKETT and WRIGHT), 1875, 19.  
*ethiodide* (BECKETT and WRIGHT), 1875, 322.
- Tetracetylbrazilil** (LIEBERMANN and BURG), 1877, ii., 193.
- Tetracetyl- $\alpha$ -bromohydrogallein** (v. BUCHKA), 1882, A., 61.
- Tetracetylchrysarobin** (LIEBERMANN and SEIDLER), 1879, A., 327; 1882, A., 858.
- Tetracetylconiferin** (TIEMANN and NAGAI), 1876, i., 77.
- Tetracetyldihydroxybenzhydrol** (v. BAeyer and BURKHARDT), 1880, A., 658.
- Tetracetyl-gallein** (v. BUCHKA), 1882, A., 60.
- Tetracetylmannitan** (BOUCHARDAT), 1873, 1124.
- Tetracetylmorphine**, action of benzoic anhydride on (BECKETT and WRIGHT), 1875, 25.  
*ethiodide* (BECKETT and WRIGHT), 1875, 319.
- Tetracetylpyrogalloquinone** (DE CLERMONT and CHAUTARD), 1882, A., 1066.
- Tetracetylquinide** (HESSE), 1880, A., 317.
- Tetracetylrufigallic acid**. See Hex-acetylrufigallic acid.
- Tetracetylsaccharovanillic acid** (TIEMANN and NAGAI), 1876, i., 78.
- Tetracetyltetracodeine**, action of ethylic iodide on (BECKETT and WRIGHT), 1875, 314.
- Tetracodeine**. See under Alkaloids.
- Tetradymite** (*telluric bismuth*) (FRENZEL), 1874, 449; (GENTH), 1875, 429.

- Tetradymite** (*telluric bismuth*) from Horhausen, near Neuwied (VOM RATH), 1881, A., 551.  
See also Bornite.
- Tetraethyl-**. See Tetrethyl-.
- Tetrahedrite** (*fullore*) and its twin formation (SADEBECK), 1873, 857.  
from Huallanca, Peru (COMSTOCK), 1880, A., 220.  
Hungarian, composition of (HIDEGH), 1881, A., 360.  
composition of (HILGER), 1877, ii., 853.  
formula of (KENGOTT), 1882, A., 147.  
new form of (CLARKE and OWENS), 1881, A., 228.  
extraction of silver from (ANON.), 1879, A., 755.
- Tetrahydrocinchonic acid** and its derivatives (WEIDEL), 1881, A., 830; 1882, A., 530.  
nitroso- (WEIDEL), 1882, A., 533.
- Tetrahydrocornicularic acid** (SPEGEL), 1881, A., 1037; 1882, A., 1076.
- Tetrahydroellagic acid** (OSER and KALMANN), 1881, A., 815.
- Tetrahydronaphthaquinol**, *dichloro-* (*dichloronaphthydrene glycol*) (GRIMAUX), 1873, 1034.
- Tetrahydrophenanthrene** (BARBIER), 1874, 1092.
- Tetrahydroquinoline** and its derivatives (WISCHNEGRADSKY), 1881, A., 444; (WEIDEL), 1881, A., 830; (OECHSNER DE CONINCK), 1882, A., 414.  
 $\beta$ -dibromo- and its salts (CLAU and ISTEI), 1882, A., 1110.
- Tetrahydroquinone** (HERRMANN), 1882, A., 713.
- Tetrahydroxyanthraquinone** (*oxypurpurin*) (DIEHL), 1878, A., 430.
- 1:3:2':4'-Tetrahydroxyanthraquinone**.  
See Anthrachrysone.
- Tetrahydroxydiphenyl** (BARTH and SCHREDER), 1879, A., 634.
- Tetrahydroxyditolyl** (NIETZKI), 1878, A., 869.
- Tetrahydroxylene** (*xylene tetrahydride*) (RENARD), 1882, A., 64, 1179.
- Tetrahydro-m-xylene** (WREDEN), 1877, ii., 446.
- Tetrahydroxyoctoic lactone** (HJELT), 1882, A., 946.
- Tetrahydroxytetraphenylethane** (ENGLER), 1879, A., 69.
- Tetrahydroxytriphenylmethane** (DOEBNER), 1880, A., 644.
- Tetrallylammonium bromide** (GROSHEINTZ), 1879, A., 779.
- Tetra- $\beta$ -lutidine platinochloride** (WILLIAMS), 1882, A., 310.
- Tetramethyl $\beta$ -amidobenzophenone** (MICHLER and MORO), 1879, A., 921.
- Tetramethyl $\beta$ -amidodiphenyl**. See Tetramethylbenzidine.
- Tetramethyl $\beta$ -amidodiphenyl** (MICHLER and PATTINSON), 1882, A., 199.
- Tetramethyl $\beta$ -amidodiphenyl dioxide** (*dioxybisdimethylaniline*) (HANIMANN and HANNHART), 1879, A., 714.
- Tetramethyl $\beta$ -amidodiphenylethane**, and its salts (SCHOOR), 1881, A., 160.
- Tetramethyl $\beta$ -amidodiphenylmethane** (MICHLER and MORO), 1879, A., 921; (FISCHER), 1880, A., 40; (MICHLER and SALATHÉ), 1880, A., 108.
- Tetramethyl $\beta$ -amidodiphenyloxamide** (SEIDTNER), 1879, A., 627.
- Tetramethyl $\beta$ -amidoditolyl** [m.p. 57°] (MICHLER and PATTINSON), 1882, A., 200.
- Tetramethyl $\beta$ -amidoditolyls** [m.p. 80° and 190°] (MICHLER and SAMPAIO), 1882, A., 177.
- Tetramethyl $\beta$ -amidopropyltriphenylmethane** (FISCHER), 1880, A., 40.
- Tetramethyl $\beta$ -amidotriphenylcarbinol**, *p*-nitro- (FISCHER), 1882, A., 393.
- Tetramethyl $\beta$ -amidotriphenylmethane**.  
See Leucomalachite-green.
- Tetramethyl $\beta$ -amidotriphenylmethane** (FISCHER), 1882, A., 834.  
reduction of (E. and O. FISCHER), 1879, A., 788.
- Tetramethylammonium**, toxic effects of (RABUTEAU), 1873, 763.  
bromide (PLIMPTON), 1881, T., 537; (DUVILLIER and BUISINE), 1881, A., 1027.  
ferrieyanide (BERNHEIMER), 1879, A., 611.  
ferrocyanide (BARTH), 1876, i., 576; (FISCHER), 1878, A., 408.  
nitrate and iodide (DUVILLIER and BUISINE), 1881, A., 1027.  
nitrate, formation of (DUVILLIER and BUISINE), 1880, A., 545.  
nitroprusside (BERNHEIMER), 1881, A., 883.
- Tetramethylaniline** from coal-tar (SESEMAN), 1873, 912.
- 1:2:3:5-Tetramethylbenzene**. See *isodurene*.
- 1:2:4:5-Tetramethylbenzene**. See *Durene*.
- Tetramethylbenzidine**, and its diamido-compound (MICHLER and PATTINSON), 1882, A., 199.
- Tetramethylcarbamide** (MICHLER and ESCHERICH), 1879, A., 935.



- Tetramethyldiphenyldiamine.** See Bis-dimethylaniline.
- Tetramethylenetetraethyltetramine** (LERMONTOFF), 1875, 145.
- Tetramethylethylene.** See Hexylene.
- Tetramethylethylenic bromide.** See Hexane, *di*bromo-.
- Tetramethylethylenic glycol.** See Pinacone.
- Tetramethylparaleucaniline** (FISCHER), 1882, A., 393.
- Tetramethylpyrazine** (*dimethylketine*) (TREADWELL), 1881, A., 895.
- Tetramethylpararosanine** (FISCHER), 1882, A., 393.
- Tetramethyl-*m*- and -*p*-stilbenes** (HEFF), 1875, 361.
- Tetramethylsulphonamide** (BEHREND), 1881, A., 717.
- Tetramethyltetrazone** (RENOUF), 1881, A., 152.
- Tetramorphine.** See under Alkaloids.
- Tetramylammonium iodide**, toxic effects of (RABUTEAU), 1873, 763.
- Tetrisoamylcarbamide** (CUSTER), 1879, A., 913.
- Tetrisoamylphosphonium iodide** (v. HOFMANN), 1873, 883.
- Tetrane.** See Furfuran.
- Tetranhydronaphtholsulphonic acid** and its potassium salt. See *di*Sulphodinaaphthylie dinaphthyloxydisulphonate.
- Tetranilidomethane**, *tetramido*-, and *tetranitro*- (HÜBNER), 1878, A., 143.
- Tetraphenol.** See Furfuran.
- Tetraphenylglycol.** See Benzpinacone.
- Tetraphenyltetramidomethane**, *tetramido*-, and *tetranitro*- (HÜBNER), 1878, A., 143.
- Tetraphenylcarbamide** (MICHLER and ZIMMERMANN), 1879, A., 935.
- Tetraphenylcrotonolactone** (*ozylepiden*) (ZININ), 1873, 489.
- Tetraphenyldiarsine oxide** (LA COSTE and MICHAELIS), 1879, A., 162.
- Tetraphenylethane** (STAEDEL), 1876, ii., 297; 1879, A., 318; (THÖRNER and ZINCKE), 1878, A., 425; (ENGLER), 1879, A., 68; (ZAGUMENNY), 1881, A., 434.
- vapour-density of (KNECHT), 1880, A., 679.
- Tetraphenylethanetetrasulphonic acid** (ENGLER), 1879, A., 69.
- Tetraphenylethylene** (STAEDEL), 1879, A., 318; (FRIEDEL and BALSOHN), 1880, A., 558.
- preparation of (SCHWARZ), 1881, A., 913.
- Tetraphenylethylenic glycol.** See Benzpinacone.
- Tetraphenylfurfuran** (*lepiden*), derivatives of (ZININ), 1875, 1004.
- Tetraphenylguanidine** (WEITH), 1874, 1170.
- Tetraphenylmelamine** and its salts (v. HOFMANN), 1875, 466; 1878, A., 300.
- constitution of (WEITH and EBERT), 1876, i., 84.
- Tetraphenyltetrazone** (FISCHER), 1878, A., 313.
- Tetraphenylthiocarbamide** (BERNTHSEN and FRIESE), 1882, A., 1089; (BERNTHSEN), 1882, A., 1299.
- Tetraphenyltolylenediguanidine** (LUSSY), 1875, 1037.
- Tetrapropylammonium hydroxide and iodide** (ROEMER), 1873, 1119.
- Tetraiso-propylphosphonium iodide** (v. HOFMANN), 1873, 882.
- Tetrapyridine**, thio-, and its salts (CAHOURS and ETARD), 1879, A., 732.
- action of dilute nitric acid on, and distillation of, with metallic copper (CAHOURS and ETARD), 1880, A., 672.
- Tetraapotetramorphine** (WRIGHT), 1873, 917.
- Tetraterebenthene**, a solid polymeride of essence of turpentine (RIBAN), 1875, 61.
- Tetrathionic acid.** See under Sulphur.
- Tetratolyethylene**, preparation of (SCHWARZ), 1881, A., 913.
- Tetratolylmelamine** (v. HOFMANN), 1875, 466; 1878, A., 301.
- Tetraxylethylene**, preparation of (SCHWARZ), 1881, A., 913.
- Tetrazodiphenyldisulphonic acid** (GRIESS), 1881, A., 428.
- Tetrenecarbamide.** See Pyrrolinecarbamide.
- Tetreneurethane.** See Ethylic pyrrolinecarbamate.
- Tetrethylamidobenzophenone** (MICHLER and GRADMANN), 1877, ii., 334.
- Tetrethylamidotriphenylcarbinol**, oxalate of (FISCHER), 1882, A., 392.
- Tetrethylammonium bromide** (PLIMPTON), 1881, T., 538.
- ferrieyanide (BERNHEIMER), 1879, A., 612.
- p*-hydroxybenzoate and salicylate, and the action of heat on (KUPFERBERG), 1878, A., 320.
- Tetrethylbenzidine** (MICHLER and PATTINSON), 1882, A., 200.

- Tetraphylcholanolic acid** (LATSCHINOFF), 1880, A., 723.
- Tetraphylphosphonium thallium iodide** (JÖRGENSEN), 1873, 476.
- Tetraphylsulphonamide** (BEHREND), 1882, A., 1283.
- Tetraphyltetrazone** (FISCHER), 1879, A., 451.
- Tetraphylthiocarbamide** (GRODZKI), 1882, A., 824.
- Tetric acid** and its homologues (DEMARÇAY), 1879, A., 457, 459.
- Tetrolcarbamide.** See Pyrrolinocarbamide.
- Tetroidianil and tetroiditoyl** (LICHTENSTEIN), 1882, A., 178.
- Tetrole.** See Furfuran.
- Tetrollic acid**, and its derivatives (LAGERMARK), 1881, A., 413; (PINNER and SCHAUHMANN), 1881, A., 793.  
and its homologues (DEMARÇAY), 1880, A., 625; 1881, A., 255.  
synthesis of (LAGERMARK), 1879, A., 782.  
action of phosphorus pentachloride on (DEMARÇAY), 1880, A., 626.
- Tetronamidophenyl mercaptan** (V. HOFMANN), 1880, A., 886.
- s-Tetrylenedicarboxylic acid** (*homöitaconic acid*) and its salts (MARKOWNIKOFF and KRESTOWNIKOFF), 1880, A., 238; 1881, A., 1127; (KRESTOWNIKOFF), 1881, A., 801.
- Teucrin** and *Teucrium fruticans* (OGIALORO-TODARO), 1879, A., 728.
- Textile fabrics**, a cause of alteration of (BALLAND), 1881, A., 1185.  
recognition of colours on (GABBA), 1873, 654.  
use of photography in printing (ANON.), 1876, ii., 232.  
estimation of size and dye in (GABBA), 1873, 654; (RÉMONT), 1881, A., 1178.  
separation of wool and silk in (RÉMONT), 1881, A., 1177.
- Textile plants**, retting of (SESTINI), 1875, 1061.
- Thaliectrine** (*macrocarpine*) (DOASSANS; HANRIOT and DOASSANS), 1881, A., 52.
- Thalictrum macrocarpum*, substance extracted from (HANRIOT and DOASSANS), 1881, A., 52.
- Thallene** (MORTON), 1877, ii., 422.  
spectra of (MORTON), 1873, 235; 1874, 14.
- Thallium**, distribution of (PHIPSON), 1874, 662.
- Thallium**, occurrence of, in carnallite (HAMMERBACHER), 1875, 734.  
atomic weight of (CROOKES), 1873, 355.  
preparation of (KRAUSE), 1876, i., 519; (NIETZKI), 1876, i., 882.  
preparation of, from the blue-dust of sulphuric acid works (STOLBA), 1874, 873.  
metallic spectrum of (LECOQ DE BOISBAUDRAN), 1874, 217.  
isometric relations of (THORPE), 1876, i., 859.  
action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 86.
- Thallium compounds** (JÖRGENSEN), 1873, 475.
- Thallium chlorate** (MUIR), 1876, i., 857.  
chloride, specific gravity of the vapour of (ROSCOE), 1878, A., 937.  
mercuric chloride (JÖRGENSEN), 1873, 476.  
iodides (KNÖSEL), 1874, 775, 1135.  
cuprotetrammonium iodide (JÖRGENSEN), 1873, 476.  
potassium polyiodide (JOHNSON), 1878, T., 187.  
trioxide (BÖTTGER), 1874, 1063.  
silicomolybdate (PARMENTIER), 1881, A., 880.  
hypophosphite (RAMMELSBERG), 1873, 2.  
sulphate, decomposition which takes place on adding, to a boiled solution of sodium pyrovanadate (CARNELLEY), 1873, 331.  
sodium sulphate and sulphide (SCHNEIDER), 1875, 533.  
tellurate, specific gravity of (CLARKE), 1879, A., 1004.  
vanadate, decomposition which takes place on adding, to sodium octovanadate (CARNELLEY), 1873, 331.  
vanadates (CARNELLEY), 1873, 323.
- Thallium organic compounds** with alcohol radicles (HARTWIG), 1874, 675; 1875, 1002.  
cyanide (FRONMÜLLER), 1874, 147.  
double salts of (FRONMÜLLER), 1878, A., 394.  
cyanocyanide (FRONMÜLLER), 1878, A., 395.  
diethyl, salts of (HARTWIG), 1875, 1002.  
mercaptide (CLAËSSON), 1877, ii., 295.  
platinocyanide (FRISWELL and GREEN-AWAY), 1877, ii., 251.  
triethyl, attempts to obtain (CARIUS and FRONMÜLLER), 1874, 676.

**Thallium, detection, estimation and separation:—**

blowpipe reactions of metallic (CHAPMAN), 1877, i., 489.

estimation of (PHIPSON), 1874, 662.  
separation and estimation of vanadium and (CARNELLEY), 1873, 324.

**Thapsia**, gum-resin from (YVON), 1877, ii., 914; (BLANCHET), 1880, A., 718; (SOUBEIRAN), 1881, A., 181.

**Thapsic acid** (BLANCHET), 1880, A., 718.

**Thaumasite** (v. NORDENSKIÖLD), 1879, A., 21; 1881, A., 1000; (LINDSTRÖM), 1880, A., 16; 1881, A., 235; (BERTRAND), 1881, A., 1000.

*Thea hybrida*, composition of the seeds of (BROWN), 1875, 1222.

**Thebaine**, solubility of, in chloroform (NOWAK), 1873, 412, 535.

colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.

**Theine**. See Caffeine under Alkaloids.

**Thenardite** (SILLIMAN), 1881, A., 1109.  
from Lake Balschach, in Central Asia (VOM RATH), 1881, A., 549.

See also Sodium sulphate.

**Theobromic acid** (KINGZETT), 1878, T., 44.

**Theobromine**. See under Alkaloids.

**Thermal waters**. See Waters.

**Thermoanalyser**, experiments with the (MULDER), 1873, 526.

**Thermobarograph** (WITZ), 1880, A., 783.

**THERMOCHEMISTRY:—**

**Heat**, atomic theory of (PUSCHL), 1879, A., 687.

relation between the work effected by the diffusion of gases, and the second law of thermodynamics (CLAUSIUS), 1879, A., 3.

application of the second law of thermodynamics to chemical phenomena (HORSTMANN), 1881, A., 777.

application of the mechanical theory of, to the study of volatile liquids (PICTET), 1876, ii., 38; 1877, i., 162.

alleged relation between the mechanical equivalent of, and the molecular weights of bodies (THOMSEN), 1877, i., 164.

application of the mechanical equivalent of, to molecular forces, weight and distance (WEINBERG), 1875, 39.

relation between the absorbing powers of bodies for, and their chemical equivalents (AYMONNET), 1877, i., 430.

**THERMOCHEMISTRY:—**

**Heat**, mechanical equivalent of (ROWLAND), 1881, A., 491.

invisible, refraction of (DESAINS), 1879, A., 864.

change in the electromotive force of galvanic couples by (VOLLER), 1874, 219.

effect of, upon a voltaic circuit completed by an electrolyte (HELLESEN), 1877, i., 429.

mechanical employment of (WEST), 1874, 1056.

surface forces caused by the communication of (REYNOLDS), 1875, 329.

internal, of bodies (PUSCHL), 1874, 1056.

attraction and repulsion of bubbles in crystals by (HARTLEY), 1877, ii., 271.

curious method of producing (OLIVIER), 1877, ii., 274.

evolved by chemical actions (BERTHELOT), 1874, 862; (PHIPSON), 1878, A., 696.

evolved by friction of liquids against solids (MASCHKE), 1873, 242.

evolved by the union of metallic chlorides with ammonia (ISAMBERT), 1878, A., 697.

evolved by mutual displacement of metals (TOMMASI), 1882, A., 1257.

evolved in the reactions of chlorine and its compounds (BERTHELOT), 1873, 1094.

evolved in the electrolytic decomposition of chromates (MORGES), 1878, A., 832.

evolved in oxidation by various oxidising agents (THOMSEN), 1873, 1187; 1874, 530; 1875, 223.

influence of substitution on evolution of, during the formation of salts (LUGNIN), 1879, A., 767, 871.

evolved on mixing sulphuric acid and water (PFAUNDLER), 1875, 1150; (CROULLEBOIS; BERTHELOT), 1877, ii., 824.

evolution of, on adding water to clay-slate, clay and coal (SKEY), 1875, 530.

action of, on gravitating masses (CROOKES), 1874, 221.

quantity of, absorbed by certain substances (AYMONNET), 1877, i., 432.

developed in the animal body (DRAPER), 1873, 287.

## THERMOCHEMISTRY :—

**Heat** developed in warm-blooded animals (FINKLER), 1878, A., 519.

measurement of, at various depths in the earth (ANON.), 1878, A., 831.

in its relation to agriculture. See Agricultural Chemistry.

**Radiant heat**, the constituent of the atmosphere which absorbs (HILL), 1882, A., 566.

direct transformation of, into electricity (HANKEL), 1880, A., 838.

action of an intermittent beam of, on gaseous matter (TYNDALL), 1881, A., 966.

**Temperature**, influence of, compared with that of mass in affecting the equilibrium of certain chemical systems (MUIR), 1879, T., 331; 1880, T., 424.

influence of, on the heat of chemical change (PFAUNDLER), 1874, 535; (NAUMANN), 1874, 536.

of combustion and dissociation of carbonic anhydride and water vapour (MALLARD and LE CHATELIER), 1882, A., 453.

of ignition of gaseous mixtures (MALLARD and LE CHATELIER), 1881, A., 778.

of formation of oxides (MITSCHERLICH), 1877, i., 42.

of initial action of carbon and hydrogen on various oxides (WRIGHT and LUFF), 1878, T., 8, 504.

rise of, occasioned by passing steam into saline solutions, and on the temperature of the vapours from saline solutions (MÜLLER), 1877, i., 430; ii., 274.

and measurement of temperature (RECKNAGEL), 1874, 123, 767.

determination of degrees of, in absolute units (LORENZ), 1873, 465.

constants (ŠUBIC), 1873, 241.

**Critical point** of mixed vapours (DEWAR), 1880, A., 842; 1882, A., 268.

**Critical pressure** of substances (MEYER), 1881, A., 133, 678; (PETERSSON), 1881, A., 133.

**Critical state** of gases (RAMSAY), 1881, A., 971; 1882, A., 136, 267.

**Critical temperature**, changes of state near the (CAILLETET and HAUTEFEUILLE), 1881, A., 677.

## THERMOCHEMISTRY :—

**Critical temperature**, state of fluids at their (HANNAY), 1882, A., 268.

of liquids (PAWLEWSKI), 1882, A., 915.

**Temperatures**, a new method of determining (DRAGOMIS), 1878, A., 3.

determinations, calorimetric (MEYER), 1880, A., 434.

constant, maintenance of (D'ARSONVAL), 1877, ii., 697.

ground, determination of, by a thermopile (ROSENTHAL and MOELLER), 1878, A., 104.

high, determination of (CRAFTS and MEIER), 1880, A., 509; (SAINTE-CLAIRE DEVILLE and TROOST), 1880, A., 521, 526.

spectrometric determination of (CROVA), 1879, A., 293.

production of, by means of ammonium nitrate (BÖTTGER), 1879, A., 102.

low, use of liquid ethylene for producing (CAILLETET), 1882, A., 914.

very low, production of, by means of Carré's freezing apparatus (LECOQ DE BOISBAUDRAN), 1875, 1235.

**Thermometers**, air (WEINHOLD), 1874, 115; (MITSCHERLICH), 1876, ii., 168; (WITZ), 1880, A., 783; (ANDREWS), 1882, A., 135; (COOKE), 1882, A., 351.

new sensitive differential, containing mercury (MENDELÉEFF), 1875, 727.

electrocapillary (DEBRUN), 1880, A., 205.

maximum and minimum (DUCLAUX), 1876, i., 336.

mercurial, determination of the true zero of (TELLIER), 1873, 129.

depression of zero point of (MILLS), 1879, A., 588; (CRAFTS), 1882, A., 913.

rise of the zero point in (CRAFTS), 1881, A., 4.

cause of variation of the fixed points of (CRAFTS), 1881, A., 342.

degrees, table for conversion of, into those of the air thermometer (THORPE), 1880, T., 154.

injuries received by, during transport (ANON.), 1873, 413.



## THERMOCHEMISTRY :—

**Thermometers** for deep sea observations (DIETRICHSON), 1873, 591.

**Pyrometer**, acoustic (MAYER), 1873, 591.

**Pyrometers** (ANON.), 1873, 1194; (WEINHOLD), 1874, 115; (SCHWARZ), 1876, i., 671.

**Thermal expansion**, experiments on (GLATZEL), 1877, ii., 820.

errors in the determination of (THORPE), 1880, T., 374.

of compounds, influence of pressure and strain on (PUSCHL), 1876, ii., 41.

of liquid carbon compounds (WIEBE), 1879, A., 1002; 1880, A., 88, 784.

of formic acid (PETTERSSON), 1882, A., 3.

of *n*-heptane from *Pinus Sabiniana* (THORPE), 1879, T., 300; 1880, T., 213.

of liquid methylic chloride (VINCENT and DELACHANAL), 1879, A., 294.

of several substances in the liquid state (THORPE), 1880, T., 141, 366.

and mechanical expansion of solid bodies (KURZ), 1874, 221, 767.

of solid elements (WIEBE), 1878, A., 549; 1879, A., 690, 1002; 1880, A., 88, 783.

of sulphur (PISATI), 1878, A., 268; (SCHILONE), 1878, A., 553.

of lead iodide and of silver-lead iodide (RODWELL), 1881, A., 495, 966.

of double iodides of mercury, silver, and copper (BELLATI and ROMANESE), 1881, A., 217.

of the chloride, bromide, and iodide of silver, and of some chlorobromiodides of silver (RODWELL), 1881, A., 965.

of silver and cuprous iodides and of their alloys (RODWELL), 1882, A., 570.

of incandescent platinum (NICHOLS), 1882, A., 354.

of butter, lard, and fats (WIGNER), 1880, A., 76.

of ebonite (KOHLEAUSCH), 1874, 430.

of glass (CRAFTS), 1880, A., 841.

**Heat conductivity** and diathermancy of air and hydrogen (BUFF), 1878, A., 261.

of highly rarefied air (CROOKES), 1881, A., 966.

## THERMOCHEMISTRY :—

**Heat conductivity** of crystallised bodies (JANNETTAZ), 1873, 838.

of cotton, wool, and silk (SCHUHMEISTER), 1878, A., 831.

of gases (STEFAN), 1876, ii., 37.

temperature and specific heat of gases, relation between (WÜLLNER), 1879, A., 2.

influence of the walls of containing vessels on the rate of heating of gases (WITZ), 1879, A., 432.

of liquids (v. BEETZ), 1879, A., 1001.

of mercury independent of temperature (HERWIG), 1874, 865; 1875, 38.

of schistose rocks (JANNETTAZ), 1876, i., 516.

of rocks and other bodies (JANNETTAZ), 1874, 1045.

of rocks and minerals (JANNETTAZ), 1876, ii., 39; (THOULET), 1882, A., 790.

of rocks and woods (LESS), 1878, A., 693.

of different soils (v. LITROW), 1875, 1150.

of water (BOTTOMLEY), 1881, A., 966.

**Atomic heat** of hydrogen in its combination with palladium (BEKETOFF), 1879, A., 590.

of oxygen (NILSON and PETTERSSON), 1880, A., 850.

**Molecular heat** of similar compounds (CLARKE), 1875, 1156.

of rare earths and their salts (NILSON and PETTERSSON), 1880, A., 838; 1881, A., 494.

of methylal (BERTHELOT and OGIER), 1881, A., 675.

**Specific heat**, law of Dulong and Petit as applied to perfect gases (WILLOTTE), 1880, A., 83.

law of Dulong and Petit, apparent variability of (HIRN), 1873, 587; (SPRING), 1875, 997.

of air (KURZ), 1874, 865; 1875, 38.

determination of the relation of the two, by the compression of a limited volume of gas (AMAGAT), 1874, 429.

of a gas, ratio of the (SIMON), 1877, i., 162.

ratio of the, in a gas having monatomic molecules (YVON-VILARCEAU), 1876, ii., 374.

of gases (FLAWITZKY), 1874, 219; 1881, A., 340; (WIEDEMANN), 1875, 328; 1876, ii., 589.

## THERMOCHEMISTRY :—

- Specific heat, temperature and heat conductivity of gases, relation between** (WÜLLNER), 1879, A., 2.  
 of gases with especial reference to mercury vapour (NAUMANN), 1876, i., 37.  
 of gases at high temperatures (MALLARD and LE CHATELIER), 1882, A., 449.  
 of chlorine, bromine, and iodine gases (STRECKER), 1881, A., 784.  
 of nitrogen peroxide (BERTHELOT and OGIER), 1882, A., 1019.  
 of vapours (FLAWITZKY), 1881, A., 340.  
 of vapours and its variation with the temperature (WIEDEMANN), 1878, A., 193.  
 of mixed liquids (WINKELMANN), 1875, 38.  
 of a mixture, and the heat evolved or absorbed in its formation, relations between (DUPRÉ), 1873, 466.  
 of water (WÜLLNER), 1878, A., 104; (HENRIHSEN), 1879, A., 1002; (PFAUNDLER and BAUMGARTNER), 1880, A., 601.  
 of saline solutions (MARIIGNAC), 1877, i., 31.  
 of concentrated solutions of hydrochloric acid (HAMMERL), 1880, A., 207.  
 of solutions of perchloric acid (BERTHELOT), 1881, A., 1092.  
 of solutions of potash and soda (HAMMERL), 1880, A., 435.  
 of mixtures of water and methylic alcohol (DUPRÉ), 1873, 466; (LECHER), 1879, A., 688.  
 of boron (MIXTER and DANA), 1874, 118; (WEBER), 1876, i., 866.  
 of carbon (PRISCHL), 1874, 1046; (WEBER), 1876, i., 866.  
 of carbon at high temperatures (DEWAR), 1873, 239.  
 of the diamond and graphite (WEBER), 1874, 224.  
 of silicon (MIXTER and DANA), 1874, 118; (WEBER), 1876, i., 866.  
 of silicon chloride (OGIER), 1879, A., 767.  
 of sulphur oxychlorides (OGIER), 1882, A., 463.  
 of fusible alloys (SPRING), 1876, ii., 592.  
 of amalgams (WIEDEMANN), 1878, A., 466.

## THERMOCHEMISTRY :—

- Specific heat of the rare earths and their salts** (NILSON and PETTERSSON), 1880, A., 838; 1881, A., 494.  
 of solid elements (WIEBE), 1880, A., 783.  
 of the refractory metals (VIOLE), 1880, A., 149.  
 of beryllium (REYNOLDS), 1877, i., 579; (NILSON and PETTERSSON), 1878, A., 556; 1880, A., 792, 850; 1881, A., 511.  
 of cerium, didymium and lanthanum (HILLEBRAND), 1877, i., 50.  
 of cerium tungstate (COSSA and ZECCHINI), 1880, A., 852.  
 of gallium (BERTHELOT), 1878, A., 556.  
 of mercury (WINKELMANN), 1877, i., 678.  
 of mercuric chloride (CARNELLEY), 1882, T., 317.  
 of double iodides of mercury, silver and copper (BELLATI and ROMANESE), 1881, A., 217.  
 of palladium (VIOLE), 1879, A., 294.  
 of palladium charged with hydrogen (ROBERTS-AUSTEN and WRIGHT), 1873, 112.  
 of platinum (VIOLE), 1878, A., 106.  
 of uranoso-uranic oxide (DONATH), 1879, A., 688.  
 of zirconium (MIXTER and DANA), 1874, 118.  
 of spiegel Eisen (v. KÖPFEN), 1879, A., 840.  
 of organic compounds and its relation to the molecular weight (v. REIS), 1881, A., 963.  
 of amylc alcohols (DIKONOFF), 1882, A., 355.  
 of chloral and chloral hydrate (BERTHELOT), 1877, ii., 827.  
 of ethylic silicate (OGIER), 1879, A., 767.  
 of glycerol (BERTHELOT), 1879, A., 874.  
 of methylenic and ethylenic chlorides and methylal (BERTHELOT and OGIER), 1881, A., 674.  
 of *n*-propylic alcohol (DIKONOFF), 1882, A., 355.  
 of animal tissues (ROSENTHAL), 1880, A., 483.  
**Latent heat, internal** (AVENARIUS), 1875, 125.

THERMOCHEMISTRY:—*Heat of formation*=*f.*; of *transformation*=*t.*; of *decomposition*=*d.*; of *dissociation*=*dis.*; of *combination*=*cb.*; of *combustion*=*c.*; of *neutralisation*=*n.*; of *substitution*=*sb.*; of *hydration*=*h.*; of *oxidation*=*o.*

**Latent heat**, molecular weight and vapour pressure, simple relations between (PICTET), 1876, ii., 38; 1877, i., 162.

and internal condition of vapours (PUSCHL), 1878, A., 194.

of carbon vapour, and Welter's law (BETHKE and LÜRMANN), 1876, ii., 267.

**Latent heat of fusion**, determination of (BERTHELOT), 1878, A., 106.

of gallium (BERTHELOT), 1878, A., 556.

of palladium (VIOLE), 1879, A., 294.

of platinum (VIOLE), 1878, A., 106.

of acetic and formic acids (PETTERSSON), 1882, A., 3.

of chloral and chloral hydrate (BERTHELOT), 1877, ii., 827.

of glycerol (BERTHELOT), 1879, A., 874.

**Latent heat of vaporisation** of liquids, apparatus for measuring the (BERTHELOT), 1878, A., 106.

of silicon chloride (OGIER), 1879, A., 767.

of sulphuric anhydride (BERTHELOT), 1880, A., 693; 1881, A., 876.

of sulphur oxychlorides (OGIER), 1882, A., 463.

of acetaldehyde (BERTHELOT), 1876, i., 869.

of amylene (BERTHELOT), 1879, A., 874.

of compounds of amylene with halogen acids (BERTHELOT), 1879, A., 435.

of amylalcohols (DIKONOFF), 1882, A., 355.

of chloral and chloral hydrate (BERTHELOT), 1877, ii., 827.

of diamylene (BERTHELOT), 1879, A., 874.

of ethylenic dibromide and of ethylic bromide (BERTHELOT), 1879, A., 435.

of ethylene oxide (BERTHELOT), 1881, A., 967.

of methylenic and ethylenic chlorides and methylal (BERTHELOT and OGIER), 1881, A., 674.

of ethylic silicate (OGIER), 1879, A., 767.

of *n*-propylic alcohol (DIKONOFF), 1882, A., 355.

**Heat of absorption** of gases by solid bodies (FAYRE), 1874, 15, 1048, 1050.

**Heat of combustion**, apparatus for measuring (FISCHER), 1880, A., 1. relation between refractive power and (THOMSEN), 1882, A., 567.

**Heat of transformation** (MOUTIER), 1873, 998.

**Thermochemical data** for acetaldehyde (*c.*) (BERTHELOT), 1876, i., 869; (*c.* and *f.*) (BERTHELOT and OGIER), 1881, A., 675.

for acetaldehyde into acetic acid (*l.*) (BERTHELOT), 1876, i., 869.

for anhydrous acetic acid with water vapour (*cb.*) (BERTHELOT), 1877, ii., 825.

for acetic acid derivatives (*f.*) (LUGININ), 1873, 1100; 1878, A., 768; 1879, A., 872.

for acetylene (*c.*) (THOMSEN), 1873, 126; 1882, A., 721; (BERTHELOT), 1876, i., 515.

for salts of the fatty acids (*f.*) (BERTHELOT), 1875, 1005.

for fatty acids with alkalis (*cb.*) (BERTHELOT), 1875, 530.

for certain alcohols and aldehydes of the fatty series (*c.*) (LUGININ), 1880, A., 181; 1881, A., 9, 871, 966; 1882, A., 567.

for the amalgams of the alkali metals (*f.* and *o.*) (BERTHELOT), 1879, A., 884.

for hydroxides of the alkaline earths (*f.*) (BERTHELOT), 1873, 1096.

for aluminium compounds (*f.*) (BERTHELOT), 1878, A., 548.

for aluminium chloride (*f.*) (THOMSEN), 1876, i., 29; ii., 672.

for aluminium hydroxide (*d. f.* and *n.*) (THOMSEN), 1876, i., 29; ii., 672.

for aluminium sulphide (*f.*) (SABATIER), 1880, A., 523.

for amides (*f.*) (BERTHELOT), 1876, i., 675.

for amidobenzoic acid (*sb.*) (LUGININ), 1879, A., 768.

for ammonia (*f.*) (BERTHELOT), 1880, A., 207; (THOMSEN), 1880, A., 603.

for ammonium salts (*f.*) (BERTHELOT), 1880, A., 523.

for ammonium cyanide (*f.*) (OGIER), 1880, A., 151.

THERMOCHEMISTRY:—*Heat of formation*=*f.*; *of transformation*=*t.*; *of decomposition*=*d.*; *of dissociation*=*dis.*; *of combination*=*cb.*; *of combustion*=*c.*; *of neutralisation*=*n.*; *of substitution*=*sb.*; *of hydration*=*h.*; *of oxidation*=*o.*

**Thermochemical data for ammonium hydrates (*f.*)** (BERTHELOT), 1873, 1096.

for ammonium sulphides (*f.*) (OGIER), 1880, A., 151; (SABATIER), 1880, A., 690.

for the polymerides of amylene (*f.*) (BERTHELOT), 1876, i., 872.

for isoamylie alcohol (*c.*) (LUGININ), 1880, A., 787.

for *n*-amylie chloride (*f.*) (BERTHELOT), 1881, A., 9.

for aniline (*f.*) (RAMSAY), 1879, T., 696.

for aniline hydrochloride (*f.*) (LUGININ), 1879, A., 767, 871.

for aniline nitrate and oxalate (*f.*) (LUGININ), 1879, A., 871.

for arsenic and arsenious acids (*f.*) (THOMSEN), 1875, 32.

for barium carbonate (*f.*) (THOMSEN), 1880, A., 82, 362.

for barium hydroxide (*f.*) (BERTHELOT), 1873, 1096.

for barium dioxide (*f.*) (BERTHELOT), 1876, i., 183.

for benzene (*c.*) (THOMSEN), 1881, A., 135; 1882, A., 721.

for benzenesulphonic acid (*f.* and *n.*) (BERTHELOT), 1876, i., 872.

for benzoic acid derivatives (*f.*) (LUGININ), 1878, A., 768; 1879, A., 873.

for boron oxide (*h.*) (DITTE), 1878, A., 194.

for bromic acid (*f.*) (THOMSEN), 1873, 1189; (BERTHELOT), 1877, ii., 823.

for acid bromides (*d.*) (LUGININ), 1875, 728.

for isobutylie alcohol (*c.*) (LUGININ), 1880, A., 787.

for *tert*.-butylie alcohol (*c.*) (LUGININ), 1882, A., 356, 568.

for the chloranhydride of butyric acid (*d.*) (LUGININ), 1874, 356.

for cadmium salts (*f.*) (THOMSEN), 1876, i., 672.

for cadmium carbonate (*f.*) (THOMSEN), 1880, A., 82, 362.

for calcium carbonate (*f.*) (THOMSEN), 1880, A., 82, 362.

for calcium hydroxide (*f.*) (BERTHELOT), 1873, 1096.

for calcium oxychloride (*f.*) (BERTHELOT), 1882, A., 452; (ANDRÉ), 1882, A., 682.

**Thermochemical data for cane sugar into dextrose and levulose (*t.*)** (FLEURY), 1876, i., 183.

for carbon compounds (*c.*) (v. RECHENBERG), 1881, A., 10, 135; (THOMSEN), 1881, A., 219; (*f.*) (BERTHELOT and OGIER), 1881, A., 870.

for the oxides of carbon (*c.* and *f.*) (THOMSEN), 1880, A., 785.

for carbon monoxide (*c.*) (BERTHELOT), 1881, A., 8.

for carbon monoxide with chlorine, oxygen and sulphur (*cb.*) (BERTHELOT), 1879, A., 591.

for a mixture of carbon monoxide and oxygen (*c.*) (BERTHELOT), 1878, A., 5; (MALLARD and LE CHATELIER), 1882, A., 453.

for the compound of carbon monoxide with cuprous chloride (*f.*) (HAMMERL), 1879, A., 888.

for carbon dioxide (*n.*) (THOMSEN), 1880, A., 362.

for carbonates (*f.*) (THOMSEN), 1880, A., 82, 361.

for carvol, carvacrol and thymol (*c.*) (WRIGHT), 1874, 67.

for cerium oxide (*n.*) (THOMSEN), 1874, 430.

for chloral (*d.* and *f.*) (BERTHELOT), 1877, ii., 827.

for chloral alcoholate (*f.*) (BERTHELOT), 1881, A., 676.

for chloral hydrate (*d.*) (BERTHELOT), 1877, ii., 827; (*f.*) (BERTHELOT), 1877, ii., 827; 1880, A., 293, 434; 1881, A., 676; (WURTZ), 1880, A., 293, 435, 604.

for *o*-, *m*- and *p*-chloranilines with hydrochloric acid (*cb.*) (LUGININ), 1877, ii., 696; 1879, A., 768, 872.

for chlorethylie alcohol (*f.*) (BERTHELOT), 1881, A., 887.

for chloric acid (*f.*) (THOMSEN), 1873, 1188; 1877, ii., 696; (BERTHELOT), 1877, ii., 825.

for acid chlorides (*d.*) (LUGININ), 1875, 631.

for compounds of metallic chlorides with hydracids (*f.*) (BERTHELOT), 1881, A., 219.

for chromates (*f.*) (MORGES), 1878, A., 765.

for citrates (*f.*) (BERTHELOT and LUGININ), 1877, i., 681.



THERMOCHEMISTRY:—*Heat of formation=f.*; *of transformation=t.*; *of decomposition=d.*; *of dissociation=dis.*; *of combination=cb.*; *of combustion=c.*; *of neutralisation=n.*; *of substitution=sb.*; *of hydration=h.*; *of oxidation=o.*

**Thermochemical data for cobalt compounds (f.)** (THOMSEN), 1877, i., 574.

for cuprous chloride (f.) (BERTHELOT), 1880, A., 208; 1881, A., 6; (THOMSEN), 1880, A., 361.

for cuprous iodide (f.) (BERTHELOT), 1881, A., 7.

for double iodides of copper, mercury and silver (t.) (BELLATI and ROMANESE), 1881, A., 217.

for cyanogen (f.) (BERTHELOT), 1879, A., 767; (THOMSEN), 1880, A., 361, 840; (c.) (BERTHELOT), 1881, A., 8.

for decenylic alcohol (*dipropylallylcarbinol*) (c.) (LUGININ), 1881, A., 871.

for diallyl (c. and f.) (BERTHELOT and OGIER), 1881, A., 674.

for diamylene (f.) (BERTHELOT), 1879, A., 874.

for diazobenzene nitrate (c. d. and f.) (BERTHELOT and VIEILLE), 1881, A., 809.

for didymium hydroxide (n.) (THOMSEN), 1874, 430.

for dimethylethylcarbinol (c.) (LUGININ), 1880, A., 787.

for dipicoline (f.) (RAMSAY), 1879, T., 696.

for dipropargyl (c.) (THOMSEN), 1882, A., 721.

for erbium oxide (n.) (THOMSEN), 1874, 430.

for ethanesulphonic acid (f.) (BERTHELOT), 1876, i., 872.

for ethers (f.) (BERTHELOT), 1876, i., 674; 1879, A., 867; (LUGININ), 1879, A., 871.

for ethers of the haloid acids (f.) (BERTHELOT), 1876, i., 675.

for ethylamine and its salts (c. and f.) (BERTHELOT), 1880, A., 787.

for ethylene into ethylic alcohol (t.) (BERTHELOT), 1876, i., 674.

for ethylenic dibromide (f.) (BERTHELOT), 1879, A., 435.

for ethylenic glycol (c.) (LUGININ), 1880, A., 604.

for ethylenic oxide (c. and f.) (BERTHELOT), 1881, A., 967.

for ethylic acetate (f.) (BERTHELOT), 1879, A., 870.

for ethylic alcohol into ethyl ether (t.) (BERTHELOT), 1876, i., 674.

**Thermochemical data for ethylic chloride (f.)** (BERTHELOT), 1879, A., 870; 1881, A., 8.

for ethylic silicate (f.) (OGIER), 1879, A., 767.

for ethylenic chloride (c. and f.) (BERTHELOT and OGIER), 1881, A., 675.

for explosives (f.) (SARRAU and VIEILLE), 1881, A., 968.

for formic acid (c.) (BERTHELOT), 1873, 1099.

for furfural (f.) (RAMSAY), 1879, T., 696.

for gases (c.) (V. THAN), 1881, A., 779.

for glycerol (f.) (RAMSAY), 1879, T., 696; (c.) (LUGININ), 1880, A., 604.

for gold compounds, influence of allotropy on (f.) (THOMSEN), 1876, ii., 374.

for gun-cotton (f.) (SARRAU and VIEILLE), 1881, A., 342, 969.

for *n*-heptane and hexahydrotoluene (c.) (LUGININ), 1881, A., 1113.

for heptioic aldehyde (c.) (LUGININ), 1880, A., 787.

for *n*-hexoic acid (c.) (LUGININ), 1881, A., 872; 1882, A., 567.

for hydracids and water (cb.) (BERTHELOT), 1873, 715; 1878, A., 363.

for hydrocarbons (f.) (THOMSEN), 1880, A., 785, 840; (BERTHELOT), 1881, A., 313; (c.) (THOMSEN), 1880, A., 785; (BERTHELOT), 1880, A., 786; (MENDELÉEFF), 1882, A., 916.

for hydrocarbons with hydracids and halogens (cb.) (BERTHELOT), 1876, i., 870.

for hydriodic, hydrobromic and hypobromous acids (f.) (BERTHELOT), 1877, ii., 823.

for hydrochloric acid with *o*-, *m*- and *p*-chlorinated anilines, and with *p*-nitraniline (cb.) (LUGININ), 1877, ii., 696; 1879, A., 768, 872.

for hydrocyanic acid and cyanides (c. and f.) (BERTHELOT), 1880, A., 839; (THOMSEN), 1880, A., 840; (c.) (BERTHELOT), 1881, A., 8.

for hydroferrocyanic acid, and of some ferrocyanides (f.) (JOANNIS), 1882, A., 791.

THERMOCHEMISTRY:—*Heat of formation*=*f.*; of *transformation*=*t.*; of *decomposition*=*d.*; of *dissociation*=*dis.*; of *combination*=*cb.*; of *combustion*=*c.*; of *neutralisation*=*n.*; of *substitution*=*sb.*; of *hydration*=*h.*; of *oxidation*=*o.*

**Thermochemical data for hydrogen with certain metals (*cb.*)** (MOUTIER), 1875, 415, 1151.

for hydrogen with the non-metallic elements (*cb.*) (THOMSEN), 1873, 126, 838.

for hydrogen and oxygen (*c.*) (V. THAN), 1877, ii., 690; (BERTHELOT), 1878, A., 5; (MALLARD and LE CHATELIER), 1882, A., 453.

for compounds of hydrogen peroxide with barium oxides (*d.* and *f.*) (BERTHELOT), 1880, A., 602.

for hydroxylamine (*d.* and *f.*) (BERTHELOT), 1877, i., 46.

for hypochlorous acid (*f.*) (THOMSEN), 1873, 1190; (BERTHELOT), 1877, ii., 824.

for hyposulphurous acid (*f.*) (BERTHELOT), 1876, ii., 473.

for iodic acid (*f.*) (THOMSEN), 1873, 1189; (BERTHELOT), 1877, ii., 274.

for periodic acid (*f.*) (THOMSEN), 1873, 1189.

for iron salts (*f.*) (THOMSEN), 1876, i., 672.

for ferrous chloride (*o.*) (THOMSEN), 1875, 226.

for magnetic oxide of iron (*f.*) (BERTHELOT), 1881, A., 219.

for lanthanum oxide (*n.*) (THOMSEN), 1874, 480.

for lead carbonate (*f.*) (THOMSEN), 1880, A., 82, 362.

for lithium chloride (*f.*) (THOMSEN), 1876, i., 29.

for lithium hydroxide (*d.*, *f.* and *n.*) (THOMSEN), 1876, i., 29.

for lutidines (*f.*) (RAMSAY), 1879, T., 696.

for magnesium chloride (*f.*) (THOMSEN), 1876, i., 29.

for magnesium oxychlorides (*f.*) (ANDRÉ), 1882, A., 696.

for magnesium hydroxide (*d.*, *f.* and *n.*) (THOMSEN), 1876, i., 29.

for magnesium sulphide (*f.*) (SABATIER), 1880, A., 523.

for manganese salts (*f.*) (THOMSEN), 1876, i., 672.

for manganese carbonate (*f.*) (THOMSEN), 1880, A., 82, 362.

for mannitol hexanitrate (*f.*) (SARRAU and VIEILLE), 1881, A., 969.

**Thermochemical data for mercury compounds (*f.*)** (THOMSEN), 1876, i., 34.

for mercury double salts (*f.*) (BERTHELOT), 1882, A., 684.

for mercury bromides and iodides (*f.*) (BERTHELOT), 1880, A., 688.

for mercury fulminate (*f.*) (BERTHELOT and VIEILLE), 1881, A., 780.

for double iodides of mercury, silver and copper (*t.*) (BELLATI and ROMANESE), 1881, A., 217.

for mercuric oxide (*d.* and *f.*) (ECHOIS), 1882, A., 18.

for methane (*c.*) (BERTHELOT), 1881, A., 8.

for methylenic chloride and methylal (*c.* and *f.*) (BERTHELOT and OGIER), 1881, A., 674.

for nickel compounds (*f.*) (THOMSEN), 1877, i., 574.

for *p*-nitraniline with hydrochloric acid (*cb.*) (LUGININ), 1877, ii., 696; 1879, A., 768, 872.

for nitrates (*f.*) (THOMSEN), 1880, A., 82, 603; (BERTHELOT), 1880, A., 522.

for nitroglycerol (*f.*) (SARRAU and VIEILLE), 1881, A., 969.

for three isomeric nitrophenols (*sb.*) (LUGININ), 1879, A., 768.

for nitrogen acids (*f.*) (THOMSEN), 1880, A., 82, 603.

for nitrogen pentoxide with water vapour (*cb.*) (BERTHELOT), 1877, ii., 825.

for nitrogen oxides (*f.*) (BERTHELOT), 1874, 440; 1880, A., 522, 688; 1881, A., 6; (THOMSEN), 1880, A., 82, 603, 689.

for nitrogen sulphide (*f.*) (BERTHELOT and VIEILLE), 1882, A., 460.

for octinyl alcohol (*methyl diallyl-carbinol*) (*c.*) (LUGININ), 1881, A., 871.

for *sec*-octylic alcohol (*c.*) (LUGININ), 1882, A., 567.

for oxidising and reducing agents (*sb.*) (THOMSEN), 1873, 1186; 1874, 530; 1875, 223.

for oxygen in hydrogen (*c.*) (SCHULLER and WARTHA), 1878, A., 5.

for the oxygen-molecule (*f.*) (FAIRLEY), 1877, i., 8.

**THERMOCHEMISTRY** :—*Heat of formation*=*f.*; of *transformation*=*t.*; of *decomposition*=*d.*; of *dissociation*=*dis.*; of *combination*=*cb.*; of *combustion*=*c.*; of *neutralisation*=*n.*; of *substitution*=*sb.*; of *hydration*=*h.*; of *oxidation*=*o.*

**Thermochemical data for ozone** (*f.*)  
(MULDER and VAN DER MEULEN),  
1882, A., 915.

for palladium compounds (*f.*)  
(JOANNIS), 1882, A., 1258.

for palladium and platinum salts  
(*f.*) (THOMSEN), 1877, ii., 566.

for phenol derivatives (*f.*) (LUGININ), 1879, A., 874.

for substituted phenols (*n.*) (LUGININ), 1878, A., 832.

for phosphates (*f.*) (BERTHELOT and LUGININ), 1876, i., 514.

for phosphorus acids (*f.*) (THOMSEN), 1875, 31.

for bromides and iodides of phosphorus (*cb.*) (OGIER), 1881, A., 218.

for phosphorus hydrides (*f.*)  
(OGIER), 1879, A., 5; 1880, A., 150.

for picoline (*f.*) (RAMSAY), 1879, T., 696.

for the ammonium salt of picric acid (*f.*) (SARRAU and VIEILLE), 1881, A., 969.

for pinacone (*c.*) (LUGININ), 1882, A., 356, 568.

for potassium haloid salts (*f.*) (BERTHELOT), 1882, A., 1019.

for potassium carbonate (*f.*) (THOMSEN), 1880, A., 82, 362.

for potassium perchlorate (*f.*) (BERTHELOT and VIEILLE), 1881, A., 1093.

for potassium chlorate and chloride (*f.*) (THOMSEN), 1880, A., 89.

for potassium chloride (*f.*) (THOMSEN), 1876, i., 29.

for potassium hydroxides (*f.*) (BERTHELOT), 1873, 999, 1096; (*d.*, *f.* and *n.*) (THOMSEN), 1876, i., 29.

for potassium iodate from iodide (*f.*) (BERTHELOT), 1878, A., 8.

for potassium sulphides (*f.* and *h.*) (SABATIER), 1879, A., 865; 1880, A., 689.

for potassium thiosulphate (*dis.* and *f.*) (BERTHELOT), 1876, i., 676.

for propaldehyde (*f.*) (BERTHELOT), 1876, ii., 474.

for propylene into isopropyl alcohol (*t.*) (BERTHELOT), 1876, i., 674.

for propylenic glycols (*c.*) (LUGININ), 1881, A., 9.

**Thermochemical data for *n*- and isopropyl alcohols** (*c.*) (LUGININ), 1880, A., 787.

for pyridine and pyrroline (*f.*) (RAMSAY), 1879, T., 696.

for reducing and oxidising agents (*sb.*) (THOMSEN), 1873, 1186; 1874, 530; 1875, 223.

for hydrated salts (*f.*) (THOMSEN), 1879, A., 6.

for silicon hydride (*f.*) (OGIER), 1879, A., 767.

for silicon sulphide (*f.*) (SABATIER), 1880, A., 523; 1881, A., 492.

for silver haloid salts (*f.*) (BERTHELOT), 1882, A., 1019.

for silver carbonate (*f.*) (THOMSEN), 1880, A., 82, 362.

for the double iodides of silver, mercury and copper (*t.*) (BELLATI and ROMANESE), 1881, A., 217.

for sodium carbonate (*f.*) (THOMSEN), 1880, A., 82, 362.

for sodium chloride (*f.*) (THOMSEN), 1876, i., 29.

for sodium hydroxides (*f.*) (BERTHELOT), 1873, 999, 1096; (*d.*, *f.* and *n.*) (THOMSEN), 1876, i., 29.

for sodium oxide (*h.*) (BEKETOFF), 1879, A., 689.

for sodium sulphate (*h.*) (DE COPPET), 1879, A., 589.

for sodium sulphides (*f.* and *h.*) (SABATIER), 1879, A., 865; 1880, A., 690; 1881, A., 492.

for strontium carbonate (*f.*) (THOMSEN), 1880, A., 82, 362.

for strontium hydroxide (*f.*) (BERTHELOT), 1873, 1096.

for salts of succinic acid (*f.*) (CHRUSTSCHOFF), 1880, A., 151.

for sulphur (*c.*) (RAMSAY), 1879, T., 697; (THOMSEN), 1880, A., 785.

for sulphur chloride, bromide, and iodide (*f.*) (OGIER), 1881, A., 673.

for sulphur oxychlorides (*f.*) (OGIER), 1882, A., 463.

for hydrogen persulphide (*f.*) (SABATIER), 1880, A., 691.

for sulphurous anhydride (*f.*) (BERTHELOT), 1877, ii., 823; 1881, A., 673.

for sulphur oxides (*f.*) (BERTHELOT), 1880, A., 688; 1881, A., 6, 673.

**THERMOCHEMISTRY** :—*Heat of formation*=*f.*; *of transformation*=*t.*; *of decomposition*=*d.*; *of dissociation*=*dis.*; *of combination*=*cb.*; *of combustion*=*c.*; *of neutralisation*=*n.*; *of substitution*=*sb.*; *of hydration*=*h.*; *of oxidation*=*o.*

**Thermochemical data** for anhydrous sulphates (*f.*) (THOMSEN), 1880, A., 82, 362.

for sulphides (*f.*) (BERTHELOT), 1874, 962, 1048; (THOMSEN), 1879, A., 433; (*f.*, *h.* and *o.*) (SABATIER), 1881, A., 493.

for thiocyanic acid and some of its salts (*f.*) (JOANNIS), 1882, A., 1158.

for tin compounds (*f.*) (THOMSEN), 1877, i., 574.

for tin bromides (*f.*) (BERTHELOT), 1880, A., 688.

for toluenesulphonic acid (*f.*) (BERTHELOT), 1876, i., 872.

for toluidine (*f.*) (RAMSAY), 1879, T., 696.

for toluidine hydrochloride (*f.*) (LUGININ), 1879, A., 871.

for trimethylamine and its salts (*c.* and *f.*) (BERTHELOT), 1880, A., 787.

for the chloranhydride of valeric acid (*d.*) (LUGININ), 1874, 356.

for vinyl ethyl carbinol (*c.*) (LUGININ), 1881, A., 9.

for water (*f.*) (SCHULLER), 1882, A., 135, 682.

for oxygenated water (*f.*) (BERTHELOT), 1876, i., 183.

for yttrium oxide (*n.*) (THOMSEN), 1874, 430.

for zinc salts (*f.*) (THOMSEN), 1876, i., 672.

for zinc ammonium chlorides (*f.*) (ANDRÉ), 1882, A., 1165.

**Heat of solution** of acetic and tri-chloroacetic acids (LUGININ), 1873, 1100.

of alcohols in water (ALEXÉEFF), 1881, A., 9.

of oxides and hydroxides of the alkaline earths (BERTHELOT), 1873, 1096.

of aluminium chloride (THOMSEN), 1876, i., 29.

of ammonia (BERTHELOT), 1873, 1096.

of ammonium nitrate (TOLLINGER), 1876, ii., 40; 1877, i., 678.

of benzenesulphonic acid (BERTHELOT), 1876, i., 872.

of bromine compounds (THOMSEN), 1877, ii., 693; 1879, A., 6.

of chloral and chloral hydrate (BERTHELOT), 1877, ii., 827.

**Heat of solution** of chlorine in water (BERTHELOT), 1873, 1094.

of chlorine compounds (THOMSEN), 1877, ii., 693; 1879, A., 6.

of cuprous chloride (BERTHELOT), 1880, A., 208; 1881, A., 6.

of cyanogen (HAMMERL), 1880, A., 435.

of dimethyl oxide (BERTHELOT), 1881, A., 8.

of ethylamine (BERTHELOT), 1880, A., 787.

of ethylenic oxide (BERTHELOT), 1881, A., 967.

of hydrochloric acid (THOMSEN), 1873, 1096; 1874, 957.

of iodine compounds (THOMSEN), 1877, ii., 693; 1879, A., 6.

of iron carbide in mercuric chloride (TROOST and HAUTEFEUILLE), 1875, 611.

of iron chlorides (SABATIER), 1881, A., 964.

of lithium and magnesium chlorides (THOMSEN), 1876, i., 29.

of manganese carbide in mercuric chloride (TROOST and HAUTEFEUILLE), 1875, 611.

of methylal (BERTHELOT and OGIER), 1881, A., 675.

of metallic nitrates (THOMSEN), 1880, A., 82.

of potassium chloride (THOMSEN), 1876, i., 29; (V. RECHENBERG), 1879, A., 588.

of salts of the fatty acids (BERTHELOT), 1875, 1005.

of mixed salts in water (WINKELMAN), 1874, 1049.

of some mixtures of salts (CHRUST-SCHOFF), 1882, A., 1257.

of sodium chloride (THOMSEN), 1876, i., 29.

of slightly soluble substances (BERTHELOT), 1876, i., 512.

of various solid, liquid and gaseous substances in water (THOMSEN), 1873, 1101.

of the sulphides (SABATIER), 1881, A., 492.

of the tartaric acids (BERTHELOT and JUNGFEISCH), 1874, 763.

of tin compounds (THOMSEN), 1877, i., 574.

of trimethylamine (BERTHELOT), 1880, A., 787.



## THERMOCHEMISTRY:—

- Heat of dilution of perchloric acid (BERTHELOT), 1881, A., 1092.  
 of nitric acid (BERTHELOT), 1874, 762.
- Thermochemistry.** See also Calorimetry.
- Thermodiffusion.** See Diffusion.
- Thermodynamics.** See Heat under Thermochemistry.
- Thermoelectric.** See under Electrochemistry.
- Thermometers.** See under Thermochemistry.
- Thevetia nereifolia*, constituents of (WARDEN), 1882, A., 308, 1126; (DE VRIJ), 1882, A., 328.
- Thevetin and thevetin-blue** (WARDEN), 1882, A., 308.
- Thialdine**, formula of (GUARESCHI), 1879, A., 711.  
 action of potassium permanganate on (GUARESCHI), 1878, A., 859; 1879, A., 710.
- Thiamides** (WANSTRAT), 1873, 909; (WALLACH), 1880, A., 556.  
 preparation of (V. HOFMANN), 1878, A., 396.  
 constitution of (BERNTHSEN), 1877, i., 618.  
 of monobasic organic acids (BERNTHSEN), 1877, i., 616; 1878, A., 70, 788; 1879, A., 922.  
 of the oxalic acid series (WALLACH and PIRATH), 1879, A., 784.
- Thioacetanilide** (V. HOFMANN), 1878, A., 396; (LEO), 1878, A., 409; (BERNTHSEN), 1878, A., 790.  
 action of methylic iodide on (WALLACH), 1879, A., 312.  
 sodium derivative of, action of ethylic bromide and chloracetate on (WALLACH), 1879, A., 312.  
 reactions of (WALLACH), 1880, A., 556.
- Thioacetanilides**, *di*- and *tri*-. (SCHMIDT), 1878, A., 974.
- Thioacetic acid**, derivatives of (GABRIEL), 1880, A., 33.  
 ethereal salts of (WALLACH and BLEIETREU), 1879, A., 786.
- Thioacetomethylanilide** (WALLACH), 1880, A., 557.
- Thio- $\alpha$ -acetonnaphthalide** (BERNTHSEN and TROMPETER), 1879, A., 147.
- Thioacetone**, formation of (SPRING), 1881, A., 711.
- Thioacetophenone** (ENGLER), 1879, A., 61.
- Thio-*p*-acetotoluidide** (BERNTHSEN and TROMPETER), 1879, A., 147.
- Thio-*o*- and -*p*-acetotoluidides**, melting points of (WALLACH), 1880, A., 557.
- Thioaldehydes** (KLINGER), 1877, ii., 305; 1878, A., 132, 720.
- Thioammeline**, a new derivative of perthiocyanogen (PONOMAREFF), 1875, 1183.
- "Thioamylic acid"** from the mother-liquors of corallin (COMMAILLE), 1873, 278.
- Thioaniline** (*p*-diamidophenyl sulphide) (SCHMIDT), 1878, A., 974.  
 action of nitrous acid on (KRAFFT), 1874, 806; 1875, 153.
- di*Thioaniline and its sulphate (SCHMIDT), 1878, A., 974.
- $\psi$ -*di*Thioaniline (*p*-diamidophenyl disulphide) (SCHMIDT), 1878, A., 975.
- Thioarsenides**, sulphides and arsenides, crystallographic and chemical relations of natural (RAMMELSBURG), 1874, 547.
- Thioarsenious acid** and its salts (NILSON), 1876, ii., 481.
- Thiobenzaldehyde** (*benzylidenic sulphide*), and the action of potash on (BÖTTINGER), 1879, A., 791.
- Thiobenzamide** (BERNTHSEN), 1878, A., 70, 790.  
 action of nascent hydrogen on (BERNTHSEN), 1877, ii., 887.
- Thiobenzanilide** (BERNTHSEN), 1878, A., 70, 585, 790; (LEO), 1878, A., 409; (V. HOFMANN), 1878, A., 585.
- $\beta$ -Thiobenzonic acid**, Fleischer's (KLINGER), 1882, A., 1058.
- Thio- $\alpha$ -benzonaphthalide** (BERNTHSEN and TROMPETER), 1879, A., 147.
- Thiobenzophenone** (BEHR), 1873, 276; (ENGLER), 1879, A., 61.
- Thio-*p*-benzotoluidide** (LEO), 1878, A., 409.
- Thiobenzotolylene-2:4-diamine** (BERNTHSEN and TROMPETER), 1879, A., 147.
- di*Thiobisdimethylaniline, desulphurisation of (HANIMANN and HANNHART), 1879, A., 714.
- Thiobismuthyl chloride** (MUIR, HOFFMEISTER, and ROBBS), 1881, T., 35.
- Thiocarbamic acid**, derivatives of (HLASIWETZ and KACHLER), 1873, 265, 628.
- Thiocarbamates** (WILL), 1882, A., 723, 1088.  
 constitution of (LIEBERMANN), 1882, A., 296.
- $\alpha$ -Thiocarbamic acid**, ammonium salt of (KRETSCHMAR), 1874, 361.
- di*Thiocarbamic acid, relation of, to thiocarbamide (BERNTHSEN and FRIESE), 1882, A., 1090.

- Thiocarbamide** (*sulphurea*) (NENCKI), 1873, 1130; (CLAUS), 1873, 1131; 1874, 573; 1876, i., 571; (VOLHARD), 1874, 464; (BLANKENHORN), 1878, A., 215; (GUARESCHI), 1878, A., 860.  
 formation of, from cyanamide (BAUMANN), 1875, 632.  
 constitution of (RATHKE), 1882, A., 166; (NENCKI and SIEBER), 1882, A., 501.  
 action of chloracetocarbamide and chloracetodimethylcarbamide on (KRAMPS), 1880, A., 631.  
 action of chloro-*o*-dinitrobenzene on (WILLGERODT), 1878, A., 141.  
 action of iodine on (LETNY), 1876, i., 911.  
 action of ethyloxalic chloride on (PEITZSCH), 1874, 1161.  
 action of, on cœnanthol (SCHIFF), 1878, A., 669.  
 action of, on silver-carbamide (PONOMAREFF), 1874, 1088.  
 relation of, to dithiocarbamic acid (BERNTISEN and FRIESE), 1882, A., 1090.  
 compounds of (CLAUS), 1874, 574; 1875, 882; 1876, i., 934; (VOLHARD), 1874, 574; (MALY), 1874, 684; (RATHKE), 1882, A., 166; (NENCKI and SIEBER), 1882, A., 501.  
 with ethylic bromide (CLAUS), 1876, i., 572.  
 with ethylic oxalate (NENCKI), 1874, 981, 1088.  
 with methylic and ethylic iodides (BERNTISEN and KLINGER), 1878, A., 569.  
 with metallic salts (MALY), 1876, i., 911.  
 with silver chloride (BAUMANN), 1875, 632.  
 sulphine-compounds of (BERNTISEN and KLINGER), 1878, A., 569; 1879, A., 650.  
 bromio- and chloro- (CLAUS), 1876, i., 572.
- Thiocarbamides** (WEITH), 1875, 251.  
 new method of preparing (MIQUEL), 1876, ii., 73.  
 action of carbonyl chloride, and of alcoholic bromides on (WILL), 1881, A., 905.  
 action of iodine on (RUDNEFF), 1879, A., 48.  
 action of alcoholic iodides on (WILL), 1882, A., 1088.  
 conversion of, into guanidines (FORSTER), 1875, 465.
- Thiocarbamides**, aromatic (RATHKE), 1879, A., 801; (FEUERLEIN), 1880, A., 44.  
 preparation of (WEITH), 1873, 1241.  
 products of the decomposition of, by acids (MAINZER), 1882, A., 1212.  
 ethylated (GRODZKI), 1882, A., 823.  
 mixed (WEITH), 1876, i., 574.
- Thiocarbamyl sulphide** (HLASIWETZ and KACHLER), 1873, 629; (GUARESCHI), 1878, A., 858.  
 ammonium salt of (HLASIWETZ and KACHLER), 1873, 628.
- "Thiocarbanilmonnaldehyde"** (SCHIFF), 1877, i., 313.
- Thiocarbanilide**. See Diphenylthiocarbamide.
- Thiocarbimidacetic acid** (CLAËSSON), 1878, A., 37.
- Thiocarbimides** (v. HOFMANN), 1875, 564.  
 action of alcohols and phenols on (MIQUEL), 1877, ii., 871.  
 action of alcoholic potash on (SCHIFF), 1877, i., 68.  
 action of gaseous hydrochloric acid on, in presence of absolute alcohol (PINNER and SCHAUMANN), 1881, A., 811.  
 action of phosphorus pentachloride on (v. HOFMANN), 1879, A., 805.  
 desulphuration of (WEITH), 1873, 908; 1874, 992.  
 a series of aromatic bases isomeric with (v. HOFMANN), 1880, A., 387.
- Thiocarbonates**, some double metallic (MERMET), 1876, i., 63.  
 delicate test for the (MERMET), 1876, i., 744.
- Thiocarbonyl dichloride**, action of, on amides (RATHKE and SCHÄFER), 1874, 163.  
 action of thiocarbonyl tetrachloride on (RATHKE), 1873, 263.
- Thiocarbonyl tetrachloride** (*perchlorinated methyl mercaptan*) (RATHKE), 1873, 262.
- Thiocarbonyl/amidodibenzoic acid** (*dicarbonylsulphocarbanilide*), desulphuration of (GRIESS), 1874, 905.
- "Thiocarboxypyruvic acid"** (DEWAR), 1873, 75.
- Thiocarvacrol** (FLESCH), 1873, 1029; (BECHLER), 1874, 471.
- Thiocuminamide**, action of nascent hydrogen on the product of the action of iodine on (WANSTRAT), 1873, 910.
- Thiocyanacetic acid**, preparation of (CLAËSSON), 1878, A., 38.

- Thiocyanacetic acid**, compound of, with carbamylthioglycollic acid (CLAËSSON), 1881, A., 715.  
polymeride of (CLAËSSON), 1881, A., 715.
- Thiocyanacetophenone** (DYCKERHOFF), 1877, ii., 327, 481.
- Thiocyanic acid**, production of, from carbon disulphide (SAINTPIERRE and JEANNEL), 1875, 1183.  
and some of its salts, heat of formation of (JOANNIS), 1882, A., 1158.  
action of, on alcohols (BLANKENHORN), 1878, A., 215.  
and its salts, action of chloracetic acid on (NENCKI), 1877, ii., 872.  
action of, on ethylic alcohol (BLANKENHORN), 1877, ii., 423.  
action of hydrogen on (SESTINI and FUNARO), 1882, A., 1180.  
stains produced by (MIQUEL), 1877, i., 457.  
compounds of (MIQUEL), 1877, ii., 869.  
with cinchonidine and quinidine (HESSE), 1876, ii., 312.
- Thiocyanates** in the residues from gas manufacture, decomposition of (SESTINI and FUNARO), 1882, A., 1180.  
presence of, in commercial soda (NIETZKI), 1877, i., 353.  
in urine (GSCHIEDLEN), 1877, ii., 205; (MUNK), 1877, ii., 347; (THUDICHUM), 1877, ii., 505.  
action of, on benzoic acid (KEKULÉ), 1873, 636.  
use of, in calico-printing (ANON.), 1880, A., 358.  
of the aromatic monamines, action of chloracetic acid on the (JÄGER), 1877, ii., 873.  
double (FLEISCHER), 1876, i., 910.  
inorganic (MIQUEL), 1877, ii., 872.  
metallic, action of, on metallic salts of organic acids (PFANKUCH), 1873, 363.
- m-di***Thiocyanobenzene** (GABRIEL), 1877, ii., 325.
- Thiocyanofornic acid** (*thiocyanocarbonic acid*) and its derivatives (HENRY), 1875, 57.
- Thiocyanuracetic acid**. See Thiocyanacetic acid, polymeride of.
- Thiodicarbonic acid** and its salts (WELDE), 1876, ii., 624; 1877, ii., 314.
- Thio-*as*-diethyloxamide** (WALLACH and PIRATH), 1879, A., 784.
- di***Thiodiglycollic acid** and its salts (CLAËSSON), 1881, A., 580.
- di***Thiodiglycollic ether** (BÖTTINGER), 1879, A., 138; (ANDREASCH), 1880, A., 236.
- Thiodilactic acid**, new method of preparing (BÖTTINGER), 1880, A., 238; 1881, A., 415.
- Thiodiprussic acids**, *mono*- and *di*- (CLAUS), 1874, 577; 1876, i., 573.
- "Thiodithiazyl,"** dichloride of (DEMARÇAY), 1881, A., 976.
- Thioformamide** (v. HOFMANN), 1878, A., 396.
- Thioformanilide** (v. HOFMANN), 1877, ii., 604; 1878, A., 396; (BERNTHSEN), 1878, A., 71, 790.  
action of heat on (NICOL), 1882, A., 611, 958.
- Thioformic acid**, potassium salt of (NICOL), 1882, A., 589.
- Thioglycollic acid** (CLAËSSON), 1877, ii., 595.  
formation of (LIEBERMANN), 1882, A., 296.  
characteristic reaction of (ANDREASCH), 1880, A., 236.  
action of phenyl- and allyl-cyanamide on (ANDREASCH), 1882, A., 407.  
metallic salts of (CLAËSSON), 1877, ii., 595; (LIEBERMANN and LANGE), 1881, A., 800.  
barium salt of (CLAËSSON), 1877, ii., 595; (ANDREASCH), 1880, A., 236.  
nitroso- (MALY and ANDREASCH), 1880, A., 630.
- Thiohydantoin** (*glycollylthiocarbamide*) (VOLHARD), 1873, 880; (MALY), 1873, 1131; (CLAUS), 1877, ii., 599.  
formula of (LIEBERMANN and LANGE), 1880, A., 44.  
constitution of (LIEBERMANN), 1882, A., 296.  
synthesis of, by means of thio-glycollic acid (ANDREASCH), 1880, A., 877; 1882, A., 407.  
action of chlorine and bromine on (KRAMPS), 1880, A., 631.  
decomposition of, by barium hydroxide (ANDREASCH), 1880, A., 326.  
hydrochloride (CLAËSSON), 1878, A., 39.
- dibromo- (KRAMPS), 1880, A., 631.  
nitroso-, and its salts (MALY), 1879, A., 712.
- Thiohydroxybenzoic acid**, 3-bromo-, and *mono*- and *di*-thiohydroxybenzoic acids (FRERICHS), 1874, 990.
- Thiohydroxybutyric acid** and  $\alpha$ -thio- $\beta$ -hydroxyisovaleric acid (DUVILLIER), 1878, A., 489.
- $\alpha$ -**Thiolactic acid** (BÖTTINGER), 1876, ii., 413, 624; 1878, A., 33; 1879, A., 45.

- Thionic acids and thionates.** See under Sulphur.
- Thionyl chloride.** See under Sulphur.
- Thio-oxamic acid** and its salts and amides (WEDDIGE), 1874, 566.
- Thiophenol.** See Phenyl mercaptan.
- Thiophenylacetamide** (BERNTSEN), 1877, i., 616; 1878, A., 585.  
action of ethylic bromide, methylic iodide and benzaldehyde on (BERNTSEN), 1878, A., 791.
- Thiophosphoryl bromide** (MacIVOR), 1874, 542.
- Thiophosphoryl chloride**, preparation and physical properties of (THORPE), 1880, T., 341.  
specific volume of (THORPE), 1875, 732.  
action of, on silver nitrate (THORPE and DYSON), 1882, T., 297.
- Thiophthalic anhydride** (SCHREDER), 1874, 990.
- $\beta$ -Thiopropionic acid**, sodium salt of, and  $\beta$ -thiopropionic chloride (DUPRÉ), 1878, A., 568.
- Thioprussic acids** (CLAUS), 1874, 577; 1876, i., 572.
- Thiopyruvic acid** (DEWAR), 1873, 74.  
reaction of, with bromine (DE CLERMONT), 1873, 495.
- diThioquinol** (KÖRNER and MONSELISE), 1877, i., 81.
- diThioresorcinol** (KÖRNER and MONSELISE), 1877, i., 81.
- Thiosinamine.** See Allylthiocarbamide.
- Thiosuccinuric acid** (PIKE), 1874, 49.
- Thiosulphuric acid** and thiosulphates. See under Sulphur.
- diThioterephthalic acid** (SCHREDER), 1874, 990.
- Thiotetrapyridine** and its salts (CAHOUS and ETARD), 1879, A., 732.  
distillation of, with metallic copper, and action of dilute nitric acid on (CAHOUS and ETARD), 1880, A., 672.
- "diThiotetrathiazyl,"** dichloride of (DEMARÇAY), 1881, A., 976.
- Thio-*p*-toluamide** (PATERNO and SPICA), 1875, 642.
- triThio- $\alpha$ -** and **- $\beta$ -triacetaldehydes** (KLINGER), 1877, ii., 305; 1878, A., 720.
- diThiotriprussic acid** (CLAUS), 1874, 577; 1876, i., 573.
- "Thiotrithiazyl"** (DEMARÇAY), 1881, A., 222.
- Thiourea.** See Thiocarbamide.
- "Thiouvinuric acid"** and its salts (NENCKI and SIEBER), 1882, A., 501.
- Thioisovaleraldehyde** (BARBAGLIA), 1881, A., 34.
- Thiuram sulphide.** See Thiocarbonyl sulphide.
- Thomas slag.** See Slag, basic.
- Thomsonite** and pachuolite (KÖNIG), 1877, ii., 119.  
composition of (BRANDL), 1882, A., 1176.
- Thomsonite** from Etna (v. LASAULX), 1882, A., 284.  
occurrence of, at Låven (BRÖGGER), 1879, A., 605.  
various forms of (PECKHAM and HALL), 1880, A., 535.
- Thonstein** (v. GÜMBEL), 1879, A., 208.
- Thorite** (v. NORDENSKIÖLD), 1878, A., 279.  
from Hitteröe, composition of (LINDSTRÖM), 1882, A., 290.  
composition of a mineral resembling (COLLIER), 1881, A., 1009.
- Thorium** and its salts (CLEVE), 1875, 234.
- Threads**, detection, by chemical means, of various fibres in (PINCHON), 1876, ii., 118.
- Thrombolite** (SCHRAUF), 1881, A., 368.
- Thulite** (ROSTER), 1878, A., 282.  
crystallographic examination of (BRÖGGER), 1881, A., 398.
- Thulium**, spectrum of (CLEVE; SORET), 1880, A., 7; (THALÉN), 1881, A., 349.
- Thuringite** from the Zirnsee in Carinthia (v. ZEPHAROVICH), 1878, A., 391.
- Thyme**, wild, oil of (FEBVE), 1882, A., 524.
- Thymohydroxycuminic acid.** See 3-Hydroxy-4:1-cuminic acid.
- Thymol**, liquid (SCHIFF), 1880, A., 892.  
constitution of (BECHLER), 1874, 471.  
synthesis of (PATERNO and CANZONERI), 1881, A., 593.  
synthesis of, from cuminaldehyde (WIDMAN), 1882, A., 727.  
action of aluminium iodide on, in presence of aluminium (GLADSTONE and TRIBE), 1881, T., 9.  
natural, action of benzylic chloride and zinc on (MAZZARA), 1882, A., 171.  
action of, on chloracetic acid (SAARBACH), 1880, A., 393.  
fusion of, with potash (BARTH), 1878, A., 574.  
and phenol, comparative experiments on the behaviour of, with different reagents (HIRSCHSOHN), 1881, A., 942.



- Thymol**, dye formed from, by the action of nitrous acid (LIEBERMANN), 1875, 168.  
 as an antiseptic (PESCHECHONOFF), 1874, 997; (HUSEMANN), 1876, i., 990.  
 influence of, on germination (HECKEL), 1879, A., 172; 1880, A., 335.  
 compound of, with chloral (JÄGER), 1875, 159.  
 derivatives of (PATERNÒ), 1875, 637.  
 aluminium derivative of (GLADSTONE and TRIBE), 1881, T., 9.  
 action of heat on (GLADSTONE and TRIBE), 1882, T., 11.  
 ethyl ether of. See Ethoxymethylpropylbenzene.  
 methyl ether of. See Methoxymethylpropylbenzene.  
 sulphate (v. ORLOWSKY), 1876, ii., 62.  
 brom- and chlor-amido-, hydrochlorides of (ANDRESEN), 1881, A., 590.  
 6-nitroso- (*thymoquinoneoxime*), and its derivatives (SCHIFF), 1876, i., 582; (WIDMAN), 1882, A., 728.  
 crystalline form of (PANEbianco), 1880, A., 548.
- Thymolactic acid** (SCICHLONE), 1882, A., 848.
- Thymolcarboxylic acid** (SPICA), 1880, A., 889.
- Thymolic acid** (BARTH), 1878, A., 575; 1879, A., 158.
- $\alpha$ -Thymolsulphonic acid**, action of diazo-compounds on (STEBBINS), 1882, A., 834.
- Thymolsulphonic acids** (PATERNÒ), 1875, 639.
- Thymoquinol** (CARSTANJEN), 1877, ii., 892; (ANDRESEN), 1881, A., 591.  
 diacetate, 6-bromo- and 6-chloro- (SCHULZ), 1882, A., 838.  
 dibenzoate, *mono*- and *di*-chloro- (SCHULZ), 1882, A., 838.
- Thymoquinolsulphonic acid** (CARSTANJEN), 1877, ii., 892.
- Thymoquinone** (STEINER), 1878, A., 508.  
 formation of, from carvacrolsulphonic acid (KEKULÉ and FLEISCHER), 1874, 66.  
 action of acid bromides and chlorides on (SCHULZ), 1882, A., 838.  
 action of methylamine on (ZINCKE), 1881, A., 595.  
 action of neutral potassium sulphite on (CARSTANJEN), 1877, ii., 892.  
*di*bromo-, and *mono*- and *di*-chloro- (ANDRESEN), 1881, A., 590.
- Thymoquinonechlorimide** (ANDRESEN), 1881, A., 590.
- Thymoquinoneoxime**. See 6-Nitroso-thymol.
- Thymoxycetic acid**. See Thymylglycollic acid.
- Thymozarin**. See Dihydroxythymoquinone.
- Thymus Serpyllum*, oil of (BURR), 1878, A., 792.  
 some constituents of (JAHNS), 1881, A., 95; 1882, A., 1065.
- Thymyl mercaptan** (RODERBURG), 1873, 1030; (FITTICA), 1875, 59.
- Thymylglycollamide** (SPICA), 1880, A., 889.
- Thymylglycollic acid** and its salts (SAARBACH), 1880, A., 393; (SPICA), 1880, A., 888.
- Tiglic acid** (*pentenoic acid*; *methylcrotonic acid*) (SCHMIDT and BERENDES), 1877, ii., 593; 1879, A., 221; (WRIGHT and LUFF), 1878, T., 339; (ROHRBECK), 1878, A., 136; (v. MILLER), 1878, A., 292; (SCHMIDT), 1879, A., 617.  
 from Roman chamomile oil (FITTIG), 1877, i., 97; ii., 429; (FITTIG and KOPP), 1879, A., 454; (FITTIG and KÖBIG), 1879, A., 455.  
 conversion of angelic acid into (FITTIG and KOPP), 1879, A., 454.  
 formation of, from  $\alpha$ -methyl- $\beta$ -hydroxybutyric acid (RÜCKER), 1878, A., 292.  
 constitution of (FITTIG), 1879, A., 456.  
 action of hydrobromic acid and bromine on (FITTIG and PAGENSTECHER), 1879, A., 455.  
 and *isovaleric acid*, calcium double salt of (SCHMIDT), 1881, A., 1126.  
 separation of, from angelic acid (FITTIG and PAGENSTECHER), 1879, A., 455.  
 chloro-, and its salts (DEMARÇAY), 1877, ii., 591; (RÜCKER), 1878, A., 292; (FRIEDRICH), 1882, A., 945.
- Tiglic aldehyde** (*guaïol*), constitution of (HERZIG), 1882, A., 593.
- Tiles**, red colouration of (BIEDERMANN and GABRIEL), 1878, A., 251.
- Time**, influence of, in affecting the equilibrium of certain chemical systems (MUIR), 1879, T., 316, 326; 1880, T., 424.  
 influence of, in the production of insoluble salts (MUIR), 1878, T., 27.
- Time method**, examination of substances by the (HANNAY), 1877, ii., 381; 1879, T., 456.

**Tin**, native (FRENZEL), 1874, 450.

occurrence of, in silicates (V. SANDBERGER), 1879, A., 608.

a probably dimorphous form of, and some crystals found associated with it (TRECHMANN; V. FOULLON), 1882, A., 576.

ancient specimen of (CHURCH), 1877, ii., 854.

recovery of, from tinned ironplates (ANON.), 1873, 205; (LAROQUE), 1877, ii., 239.

grey, modification of (SCHERTEL), 1879, A., 888.

crystallised (TRECHMANN; V. FOULLON), 1882, A., 576.

preparation of (STOLBA), 1874, 1064.

molecular properties of (RAMMELSBERG), 1881, A., 685.

specific volume of (THORPE), 1880, T., 386.

behaviour of, to acetic acid and turpentine oil (MERRICK), 1874, 1065, 1188.

action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 84.

action of sulphuric acid on (MUIR and ROBS), 1882, A., 693.

occurrence of metallic, in feeding cakes (CHURCH), 1875, 381.

"**Tin, cry of**," phenomenon commonly called (DOUGLAS), 1881, A., 783.

**Tin alloy** with lead. See under Lead alloy.

**Tin**, compound of, with platinum and oxygen, analogous to purple of Cassius (DELACHANAL and MERMET), 1876, i., 48.

salts, some reactions of (DITTE), 1882, A., 808.

**Tin** tetrabromide (*stannic bromide*), preparation of (WATTS and BELL), 1878, T., 444.

preparation and properties of (CARNELLEY and O'SHEA), 1878, T., 55.

dichloride (*stannous chloride*), vapour-density of (V. and C. MEYER), 1879, A., 1014; (CARNELLEY), 1880, A., 219.

heat of formation of (THOMSEN), 1877, i., 576.

heat evolved in the action of chlorine on (BERTHELOT), 1873, 1095.

action of oxygen on (BERTHELOT), 1878, A., 636.

oxidation of (THOMSEN), 1875, 224.

tetrachloride (*stannic chloride*), preparation of (BRONNER), 1873, 1274; (WATTS and BELL), 1878, T., 442.

**Tin** tetrachloride (*stannic chloride*), preparation and physical properties of (THORPE), 1880, T., 331.

heat of formation of (THOMSEN), 1877, i., 576.

action of, on benzene (ARONHEIM), 1877, ii., 324.

action of, on benzene, toluene, and naphthalene (SMITH), 1876, ii., 31; 1877, ii., 551.

action of chlorosulphonic acid on (CLAUSNIZER), 1879, A., 201.

action of oxygen on (BERTHELOT), 1878, A., 635.

hydroxides, chemical composition of (VAN BEMMELEN), 1880, A., 849.

nitrate (WEBER), 1882, A., 1266.

monoxide (*stannous oxide*), crystalline, preparation of (VARENNE), 1879, A., 1016.

heat of formation of (THOMSEN), 1877, i., 576.

action of acid and alkaline solutions on (DITTE), 1882, A., 1029.

dissolved in soda, action of, on gun-cotton (BÖTTGER), 1874, 192.

dioxide (*stannic oxide*, *stannic anhydride*), heat of formation of (THOMSEN), 1877, i., 576.

dimorphism of (MICHEL-LÉVY and BOURGEOIS), 1882, A., 1030.

solubility of, in hydrochloric acid (ARNOLD), 1879, A., 888.

action of, on potassium carbonate (MILLS and PRATT), 1879, T., 338.

See also Cassiterite.

stannic acid, chloro- (MALLET), 1879, T., 524.

stannates, chloro-, of the rare earths (CLEVE), 1879, A., 601.

phosphides (NATANSON and VORMANN), 1878, A., 13; (EMMERLING), 1879, A., 509.

sulphides, action of alkali sulphides on (DITTE), 1882, A., 1030.

**Tin organic compounds:**—

stannic butylides (CAHOURS), 1874, 348.

diisobutyl diiodide and dichloride (CAHOURS and DEMARÇAY), 1879, A., 919.

diethyl compounds, crystalline form of (HIORTDAHL), 1879, A., 518.

diphenyl compounds (ARONHEIM), 1879, A., 249, 651.

dipropyl compounds, crystalline form of (HIORTDAHL), 1879, A., 519.

dipropyl diiodide (CAHOURS), 1879, A., 622.

**Tin organic compounds:—**

- stannic *n*- and *iso*-dipropyl diiodide and dichloride (CAHOUS and DEMARÇAY), 1879, A., 918.  
 dipropyl oxide (HIORTDAHL), 1879, A., 519.  
 ethyl, and its reactions (FRANKLAND and LAWRENCE), 1879, T., 130.  
 mercaptide (CLAËSSON), 1877, ii., 295.  
 triisomyl iodide and hydrate (CAHOUS and DEMARÇAY), 1879, A., 919.  
 triisobutyl iodide (CAHOUS and DEMARÇAY), 1879, A., 919.  
 triethyl compounds (FRANKLAND and LAWRENCE), 1879, T., 132.  
 crystalline form of (HIORTDAHL), 1879, A., 519.  
 trimethyl sulphate, crystalline form of (HIORTDAHL), 1879, A., 519.  
 triphenyl chloride (ARONHEIM), 1879, A., 250, 651.  
 tripropyl compounds (CAHOUS), 1873, 366; 1879, A., 622; (CAHOUS and DEMARÇAY), 1879, A., 918.  
 triisopropyl iodide (CAHOUS and DEMARÇAY), 1879, A., 918.  
**Tin ores**, composition of (ARNOLD), 1877, ii., 922.  
**Tinstone**. See Cassiterite.  
**Tin, detection, estimation and separation:—**  
 detection of, in presence of antimony (MUIR), 1882, A., 777.  
 detection of lead in (FORDOS), 1875, 665.  
 estimation of (GOPPELSROEDER), 1875, 383; (PELLET and ALLART), 1877, ii., 803; (WELLER), 1882, A., 1324.  
 estimation of, in the presence of copper (BUSSE), 1878, A., 340.  
 separation of, from antimony (DEWEY), 1880, A., 289; (WELLER), 1882, A., 1324.  
 separation of, from antimony and arsenic (WINKLER), 1876, i., 748.  
**Tin-plate cuttings**, utilisation of (OTT), 1873, 308.  
 working up of (KÜNZEL), 1874, 1186.  
**Tin tank**, corrosion of a (SHARPLES), 1874, 1187.  
**Tinctures**, analytical examination of (ALLEN), 1880, A., 194.  
**Tinder ore** of Clausthal (RÖSING), 1881, A., 24.  
**Tinning** of brass, copper, iron, etc., in the wet way (PAUL), 1873, 955.

- Tinning** of iron tacks (WILEY), 1875, 1302.  
 solution (HESZ), 1880, A., 425.  
 tissues (JACOBSEN), 1874, 720.  
**Tissue**, consumption of, in starving Herbivora (RUBNER), 1882, A., 416, 749.  
 relation of oxygen to (FRAENKEL), 1876, i., 948.  
 oxidation of, in leukæmia (NENCKI and SIEBER), 1882, A., 1309.  
 cellular, diffused throughout the organism of the Vertebrata, properties and composition of (MÜNTZ), 1873, 920.  
 muscular, nutrition of, in health (MARCET), 1873, 77, 186.  
 and pulmonary, nutrition of, in health and when affected by phthisis (MARCET), 1873, 186.  
 of *Pecten irradians*, glycogen and glycocine in the (CHITTENDEN), 1875, 1275.  
 vegetable, and tannin, combination of (MÜNTZ), 1877, ii., 350.  
 general method of analysis of (FREMY), 1877, i., 229.  
 See also Agricultural Chemistry.  
**Tissue change** in children, researches on (CAMERER), 1881, A., 189.  
 in the animal body after blood-letting (BAUER), 1873, 644.  
 on a milk diet (CAMERER), 1882, A., 636, 749.  
 influence of the eye upon (v. PLATEN), 1876, i., 722; (PFLÜGER), 1876, ii., 107.  
 products of, and their influence on the results of digestion experiments (HEIDEN), 1878, A., 524.  
 influence of respiration on (PFLÜGER; FINKLER and OERTMANN), 1877, i., 483.  
 and body temperature in Amphibia, relation between (SCHULZ), 1877, i., 327.  
 influence of temperature on, in the Mammalia (PFLÜGER), 1876, ii., 106, 647.  
 of warm-blooded animals, influence of the surrounding temperature on the (COLASANTI), 1877, i., 327; (v. VOIT), 1879, A., 75; (v. VOIT and THEODOR), 1879, A., 951.  
**Tissue substances**, method for the easy separation of (STEENBUCH), 1882, A., 559.  
**Titanic iron** and titanic iron ore. See Ilmenite.  
**Titanic oxide**. See Titanium dioxide.  
**Titanite**. See Sphene.

**Titanium**, presence of, in all the primitive rocks (DIEULAFAIT), 1882, A., 371.

and vanadium in the basalts of Clermont-Ferrand (Auvergne) (ROUSSEL), 1874, 137.

preparation of metallic (KERN), 1876, i., 882.

spectrum of the vapour of (LIVING and DEWAR), 1881, A., 957; 1882, A., 254.

specific volume of (THORPE), 1880, T., 386.

**Titanium compounds** (FRIEDEL), 1874, 1065; 1876, i., 190; (FRIEDEL and GUÉRIN), 1876, ii., 46; 1877, i., 168; (GLATZEL), 1877, i., 688.

**Titanium dichloride**, action of, on titanic irons, and on mixtures of titanic acid and oxide of iron (FRIEDEL and GUÉRIN), 1877, i., 173.

trichloride (FRIEDEL and GUÉRIN), 1877, i., 168; (GLATZEL), 1877, i., 688.

tetrachloride (*titanic chloride*), preparation of (WATTS and BELL), 1878, T., 443.

physical properties of (THORPE), 1880, T., 329.

action of chlorosulphonic acid on (CLAUSNIZER), 1879, A., 201.

compound of, with acetic chloride (BERTRAND), 1880, A., 624.

compound of, with benzoic chloride (BERTRAND), 1881, A., 273.

compounds of, with ethers (DEMARÇAY), 1873, 1015.

compound of, with ethyl ether (BEDSON), 1876, i., 311; (BERTRAND), 1881, A., 240.

compound of, with phosphorus trichloride (BERTRAND), 1881, A., 347.

oxychloride (FRIEDEL and GUÉRIN), 1876, ii., 46; 1877, i., 171.

fluoride (GLATZEL), 1877, i., 688.

nitrides (FRIEDEL and GUÉRIN), 1877, i., 174.

sesquioxide (FRIEDEL and GUÉRIN), 1876, ii., 46; 1877, i., 168; (GLATZEL), 1877, i., 688.

dioxide (*titanic anhydride*, *titanic oxide*), action of, on potassium carbonate (MILLS and WILSON), 1878, T., 365.

See also Anatase, Brookite, and Rutile.

**Titanic acid**, oxidation of (PICCINI), 1882, A., 809.

(*Toluene compounds*  $Mc=1$ .)

**Titanic acid**, precipitation of (AUSTEN and WILBER), 1882, A., 1234.

modification of Forbes's method of estimating (BETTEL), 1874, 93.

**Titanates** from Småland (BLOMSTRAND), 1880, A., 15.

**Titanium sulphates** (GLATZEL), 1877, i., 688.

oxythiotetrachloride (CLAUSNIZER), 1879, A., 691.

**Titanium organic compounds** : —

titanic ethers (DEMARÇAY), 1875, 441.

trichlorhydrin (BEDSON), 1876, i., 313.

**Titanium minerals**, occurrence of, in the Saxon granulites (LEHMANN), 1882, A., 580.

**Titanium**, estimation of, in pig-iron and steel (DROWN and SHIMER), 1881, A., 647.

**Titanomorphite**. See Spheue.

**Titanotungstates** (KLEIN), 1881, A., 880.

**Tobacco**, combustibility of (QUAIAT), 1881, A., 68.

consideration of the active poison in the combustion-products of (KISSLING), 1882, A., 906, 1253.

action of alcohol and ether on, and the distillation of the extract thus obtained (SKALWEIT), 1882, A., 1005.

Italian, improvement of (DE NEGRI), 1880, A., 200.

composition of the ash of Virginian, with estimation of nicotine and total nitrogen in (IRBY and CABELL), 1875, 289.

estimation of nicotine in (ZINOFFSKY), 1874, 497; (SKALWEIT), 1882, A., 108; (KISSLING), 1882, A., 1005.

See also under Agricultural Chemistry.

**Tobacco-smoke**, nicotine in (HEUBEL), 1873, 760; (KISSLING), 1882, A., 906, 1253.

Virginian, composition of (SCHWARZ), 1878, A., 188.

**Tobermorite**. See Gyorlite.

**Tolane**. See Diphenylacetylene.

**p-Tolenyl-o-phenylenediamine** (*anhydrotolyldiamidobenzene*) (HÜBNER), 1878, A., 144; 1882, A., 504; (BRÜCKNER), 1881, A., 93.

**p-Tolenyltolylene-3:4-diamine** (*anhydrotolyldiamidotoluene*) (HÜBNER), 1878, A., 144; 1882, A., 504.



(*Toluene compounds*  $Me=1$ .)  
*p*-Tolonyl-*m*-xylylene-5:6-diamine (*anhydrodiamido-p-tolylxylylene*) (HÜBNER), 1878, A., 144; 1882, A., 504.  
 oxidation of (BRÜCKNER), 1881, A., 94.  
**Tolidine.** See Ditolyl, *diamido*-.  
*o*-Tolualdehyde (RAYMAN), 1877, ii., 894.  
*m*-Tolualdehyde (GUNDELACH), 1876, ii., 514; (ETARD), 1880, A., 468; 1881, A., 582.  
*p*-Toluamide (SPICA), 1876, i., 600; (FISCHLI), 1879, A., 638.  
 thio- (PATERNO and SPICA), 1875, 642.  
*p*-Toluanilide (FISCHLI), 1879, A., 638.  
 oxidation of (BRÜCKNER), 1881, A., 95.  
*p*-Tolubenzylamine. See *p*-Xylidine.  
**Toluene** (*methylbenzene*) (HODGKINSON), 1878, T., 497.  
 formation of, from dibenzyl (BARBIER), 1877, i., 74.  
 electrolysis of (RENARD), 1881, A., 721.  
 volume of mixtures of carbon tetrachloride and (BROWN), 1881, T., 211.  
 distillation of (NAUMANN), 1878, A., 47.  
 distillation of mixtures of carbon tetrachloride and (BROWN), 1881, T., 304, 528.  
 action of heat on (CARNELLEY), 1880, T., 702.  
 action of heat on the mixed vapours of benzene and (CARNELLEY), 1880, T., 701.  
 action of amylic chloroxalate on (ROSER), 1881, A., 731.  
 action of antimony trichloride on (SMITH), 1876, ii., 31; 1877, ii., 553.  
 action of bromine on (JACKSON and FIELD), 1880, A., 878.  
 action of carbonyl chloride on (ADOR and CRAFTS), 1878, A., 405.  
 action of chloral and aldehyde on (FISCHER), 1875, 154.  
 action of chlorosulphonic acid on (BECKURTS and OTTO), 1879, A., 229.  
 action of chromyl dichloride on (ETARD), 1877, i., 584; 1881, A., 581.  
 action of ethylenic bromide on, in presence of aluminium chloride (FRIEDEL and BALSOHN), 1881, A., 260.

(*Toluene compounds*  $Me=1$ .)  
**Toluene** (*methylbenzene*), action of hydriodic acid on (WREDEN), 1876, i., 914.  
 action of methylal on (WEILER), 1875, 151.  
 action of nitrogen peroxide on (LEEDS), 1881, A., 584.  
 action of oxygen and sulphur on (FRIEDEL and CRAFTS), 1878, A., 670.  
 action of phosphorus trichloride on (LANGE), 1875, 1189; (MICHAELIS and LANGE), 1876, i., 392.  
 action of sulphuric acid on (BECKURTS), 1877, ii., 774.  
 chlorination of, by means of molybdenum pentachloride (ARONHEIM and DIETRICH), 1876, i., 392.  
 a new base obtained by the (SMITH), 1880, A., 387.  
 methylation of (JACOBSEN), 1882, A., 390.  
 illuminating power of (KNUBLAUCH), 1881, A., 329.  
 compounds of, with aluminium chloride (GUSTAVSON), 1879, A., 308, 461.  
 some new derivatives of (ARONHEIM and DIETRICH), 1876, i., 392; (NEVILE and WINTHER), 1881, T., 84.  
**Toluene**, amido-. See Toluidine.  
*diamido*-. See Tolylenediamine.  
*triamido*-, hydrochloride, and sulphate of (RUHEMANN), 1882, A., 392.  
 bromo-, isomeric, influence of the amido-group on the orientation of bromine or  $NO_2$  in the benzene-nucleus, as illustrated by the preparation of (NEVILE and WINTHER), 1880, T., 429.  
*o*-bromo-, and its derivatives (WROBLEWSKI), 1874, 53.  
*o*-xylene from (JANNASCH and HÜBNER), 1874, 257.  
*m*-bromo- (WROBLEWSKI), 1874, 50; 1875, 155; 1878, A., 977; (HÜBNER and GRETE), 1874, 151; (GRETE), 1874, 986; 1875, 887; 1876, i., 71.  
*p*-bromo- (WROBLEWSKI), 1874, 53.  
 oxidation of (ETARD), 1879, A., 320; 1881, A., 581.  
*o*- and *p*-bromo- (HÜBNER and POST), 1874, 56.  
*o*-, *m*- and *p*-bromo-, preparation and properties of (KÖRNER), 1876, i., 216.

(*Toluene compounds Me=1.*)

**Toluene**,  $\omega$ -bromo-. See Benzylic bromide.

3:5-dibromo-, preparation of orcinol from (NEVILE and WINTHER), 1882, T., 421.

2:3-, 2:5-, and 3:4-dibromo-, position taken by the nitro-group on nitrating (NEVILE and WINTHER), 1881, T., 83.

dibromo-, isomeric (WROBLEWSKI), 1874, 53; (NEVILE and WINTHER), 1880, T., 431.

dibromo-. See also Benzylic bromide, bromo-.

3:4:5- and 2:4:6-tribromo- (WROBLEWSKI), 1874, 54.

tri- and tetra-bromo-, isomeric, preparation of (NEVILE and WINTHER), 1880, T., 446.

pentabromo- (GUSTAVSON), 1878, A., 48; 1879, A., 142; (NEVILE and WINTHER), 1880, T., 450.

2:3- or 5- and 3:4-bromiodo- (WROBLEWSKI), 1874, 51.

3:5:4-dibromiodo- (WROBLEWSKI), 1874, 54; 1878, A., 977.

3:5:2:4-dibromodiodo- (WROBLEWSKI), 1878, A., 978.

3:2- and 3:4-bromiodonitro- (WROBLEWSKI), 1874, 51.

3:5:4:2-dibromiodonitro- and 3:5:2:4-dibromodiodonitro- (WROBLEWSKI), 1878, A., 978.

m-bromo-o-nitro- (WROBLEWSKI), 1874, 53; (GRETE), 1876, i., 72.

2:4-bromonitro-, preparation of (NEVILE and WINTHER), 1881, T., 84.

3:5-bromonitro- (WROBLEWSKI), 1878, A., 977.

4:2- and 4:3-bromonitro- (WROBLEWSKI), 1874, 53; 1875, 888.

$\omega$ -bromo-3- and -4-nitro- and di-bromo-o-nitro- (WACHENDORFF), 1877, i., 207.

2:3- and 3:5-dibromonitro- (WROBLEWSKI), 1874, 54.

2:3:5-dibromonitro- (NEVILE and WINTHER), 1880, T., 434.

2:4:6:3-tribromonitro- (WROBLEWSKI), 1874, 54.

2:5:6:4-tribromonitro-, preparation of (NEVILE and WINTHER), 1881, T., 84.

chlorinated derivatives of, boiling-points of (HINRICHS), 1875, 728.

m-chloro- (WROBLEWSKI), 1874, 54.

p-chloro- (ENGELBRECHT), 1874, 986.

o- and p-chloro- (HÜBNER and MAJERT), 1873, 1135.

(*Toluene compounds Me=1.*)

**Toluene**, monochloro- [b.p. 158°], di-chloro- [b.p. 196°] and trichloro- [m.p. 73°, and b.p. 237°] (ARONHEIM and DIETRICH), 1876, i., 392.

$\alpha$ - and  $\beta$ -chlorido- (WROBLEWSKI), 1874, 55.

chloronitro-, action of sodium on (v. HOFMANN and GEYGER), 1873, 169.

4:2-chloronitro- (WROBLEWSKI), 1874, 55; (ENGELBRECHT), 1874, 986.

$\omega$ -chloro-4-nitro-, and 2-4-chloronitro- (WACHENDORFF), 1877, i., 207.

dichloronitro- (WROBLEWSKI), 1874, 56.

o-nitro-, action of amylic chloroxalate on (ROSER), 1881, A., 731.

anthranilic acid from (GREIFF), 1880, A., 648.

m-nitro- (GOLDSCHMIDT), 1879, A., 236.

presence of, in commercial nitro-toluene (MONNET, REVERDIN and NÖLTING), 1879, A., 625.

p-nitro-, action of chromyl dichloride on (ETARD), 1881, A., 583.

action of, on the animal economy (JAFFÉ), 1875, 478.

isomeric sulpho-acids from (HART and REMSEN), 1877, ii., 776.

m- and p-nitro- (ROSENSTIEHL), 1873, 272.

o- and p-nitro-, action of sodium methoxide on (KLINGER), 1882, A., 1062.

o- and p-mono-, 2:4-di-, and 2:4:6-tri-nitro- (MILLS), 1876, i., 393.

2:4-dinitro- (ROSENSTIEHL), 1873, 274.

3:5-dinitro- (STAEDEL), 1881, A., 724.

preparation of orcinol from (NEVILE and WINTHER), 1882, T., 415.

**Toluene red** (ROSENSTIEHL and GERBER), 1882, A., 964.

**Toluene sulphhydrate**. See Toly mercaptan.

**Tolueneazo-**. See under Azo-.

**Toluenedichlorochromic acid** (*benzylidenedichlorochromic acid*) (ETARD), 1881, A., 581.

**Toluenedicarboxylic acid** (*methylphthalic acid*) (BLUMSTRAND), 1873, 506.

$\alpha$ -**Toluene-2:4-disulphonamide** (FAHLBERG), 1879, A., 804; 1881, A., 816.

(*Toluene compounds Me=1.*)

**$\alpha$ -Toluene-2:4-disulphonic acid** and its derivatives (BLOMSTRAND), 1873, 505; (GNEHM), 1877, ii, 893; (FAHLBERG), 1879, A., 804; 1881, A., 816.

preparation of (GNEHM and FORRER), 1877, ii, 611.

constitution of (CLAËSSON and BERG), 1880, A., 889.

**$\alpha$ -Toluene-2:4-disulphonic chloride** (FAHLBERG), 1881, A., 816.

**Toluenephosphinic acid** (MICHAELIS and PANEK), 1880, A., 641.

**Toluenephosphochlorides** (MICHAELIS), 1879, A., 721; (MICHAELIS and PANEK), 1882, A., 959.

**Toluenephosphonic acids**, and their salts (MICHAELIS and PANEK), 1880, A., 641; 1882, A., 959.

**Toluenephosphonic acid, trichloro-** (MICHAELIS and LANGE), 1876, i, 392.

**$p$ -Toluenephosphorylchloride** (MICHAELIS and PANEK), 1882, A., 959.

**$p$ -Toluenesulphonic acid**, new method of preparing (SCHILLER and OTTO), 1877, i, 312.

action of fuming nitric acid, and of nitrous acid on (KOENIGS), 1879, A., 314.

**$o$ -Toluenesulphonamide** (BECKURTS), 1877, ii, 775; (FAHLBERG), 1879, A., 804.

oxidation of (REMSEN), 1876, i, 258; (FAHLBERG and REMSEN), 1879, A., 628.

**$m$ -Toluenesulphonamide**, oxidation of (REMSEN and PALMER), 1882, A., 1095.

**$p$ -Toluenesulphonamide**, oxidation of (REMSEN), 1876, i, 258.

**Toluene-4-sulphonamide**, 2:6-(?)-*di*-nitro- (SCHWANERT), 1877, ii, 471.

**Toluenesulphonic acid** and bromo- (GERVER), 1874, 168.

heat of formation of (BERTHELOT), 1876, i, 872.

**$o$ -Toluenesulphonic acid** (HÜBNER and POST), 1874, 58; (BECKURTS), 1877, ii, 775.

formation of (JENSSEN), 1875, 77.  
and its amide, 5-bromo- (LIMPRICHT), 1874, 902; (WECKWARTH), 1874, 1093.

**$m$ -bromonitro-** (WROBLEWSKI), 1874, 52; (LIMPRICHT), 1874, 902.

**$p$ -bromonitro-**, and its salts (HÜBNER and HAESSELBARTH), 1873, 886; (HÜBNER and POST), 1874, 57.

***di*-nitro-** (SCHWANERT), 1877, ii, 469, 612.

(*Toluene compounds Me=1.*)

**$m$ -Toluenesulphonic acid** (HÜBNER and POST), 1874, 60; (v. PECHMANN), 1875, 79.

**$o$ -bromonitro-**, and its salts (HÜBNER and POST), 1874, 59.

**$p$ -bromonitro-**, and its salts (HÜBNER and HAESSELBARTH), 1873, 886; (HÜBNER and POST), 1874, 56.

**Toluene- $m$ -sulphonic acid**, Beckurts' so-called (FAHLBERG), 1879, A., 804; (OTTO), 1880, A., 810.

**$p$ -Toluenesulphonic acid**, experiments for preparing the thio-ethers of (SCHILLER and OTTO), 1877, i, 469.

sodium salt of, action of ethyldenic chloride on (OTTO), 1880, A., 811.

**$o$ -bromonitro-** (HAYDUCK), 1874, 1096.

***di*-nitro-** (SCHWANERT), 1877, ii, 469, 612.

**Toluene-2-sulphonic acid**, 4-bromo-, and its derivatives (HÜBNER and HAESSELBARTH), 1873, 886; (JENSSEN), 1874, 480; (LIMPRICHT), 1875, 264.

**4-bromo-**, and its salts, amide and chloride (HÜBNER and POST), 1874, 58; (JENSSEN), 1875, 77.

**4-chloro-**, and its salts (HÜBNER and MAJERT), 1873, 1136; (JENSSEN), 1875, 78.

**4-nitro-** (HART and REMSEN), 1877, ii, 776.

**4-nitro-**, and its chloride and amide (JENSSEN), 1874, 479.

**Toluene-3-sulphonic acid**, 4-bromo- (LIMPRICHT), 1874, 991; 1875, 264; (v. PECHMANN), 1875, 80.

**4-bromo-**, and its amide (HÜBNER and POST), 1874, 56.

**6-bromo-** (LIMPRICHT), 1874, 991; 1875, 264; (v. PECHMANN), 1875, 79.

**6-bromo-**, and its salts, and amide and chloride (HÜBNER and POST), 1874, 58.

***di*-bromo-** (SCHÄFER), 1875, 370, 462.

**4- and 6-chloro-**, and its metallic salts (HÜBNER and MAJERT), 1873, 1136.

**Toluene-5-sulphonic acid**, 3-bromo-, preparation of oreinol from (NEVILLE and WINTHER), 1882, T., 420.

**Toluene- $\omega$ -sulphonic acid** (*benzylsulphonic acid*) and its potassium salt (OTTO and LÜDERS), 1880, A., 812.

**$p$ -chloro-**, and its salts (JACKSON and WHITE), 1880, A., 879; 1881, A., 806.

**Toluenesulphonic acids** and their derivatives (JENSSEN), 1875, 77; (v. PECHMANN), 1875, 78; (CLAËSSON and WALLIN), 1880, A., 256.

(*Toluene compounds*  $Me=1$ .)

**Toluenesulphonic acids** from diazo-compounds (MÜLLER and WIESINGER), 1879, A., 933.

*m*-bromo- [ $\alpha$ -  $\beta$ - and  $\gamma$ -acids], and their salts (WROBLEWSKI), 1874, 52.

*p*-iodo- (GLASSNER), 1875, 897.

**Toluenesulphonic chloride**, liquid, and the action of ammonia on (FAHLBERG), 1879, A., 804.

*p*-**Toluenesulphonic chloride**, dinitro- (SCHWANERT), 1877, ii., 471.

**Toluene- $\omega$ -sulphonic chloride and amide** (LIMPRICHT), 1873, 1040; (OTTO and LÜDERS), 1880, A., 812.

**Toluene-2:4:6-trisulphonic acid** and its salts and amide (CLAËSSON), 1881, A., 429.

**$\alpha$ -Toluic acid.** See Phenylacetic acid.

***o*-Toluic acid** (*methylbenzoic acid*), formation of (FITTIG and RAMSAY), 1874, 68.

oxidation of, to phthalic acid (WEITH), 1875, 73.

prepared synthetically from liquid dimethylbenzene, oxidation of, by chromic acid (JANNASCH), 1874, 479.

***m*-Toluic acid** and its derivatives (FITTIG), 1873, 276; (BÖTTINGER and RAMSAY), 1874, 69; (JACOBSEN), 1882, A., 185; (RADZISZEWSKI and WISPEK), 1882, A., 1283.

oxidation of *m*-xylene to (BRÜCKNER), 1876, ii., 85.

amido-, transformation of, into chloro- and bromo-*m*-toluic acids (REMSEN and KUHARA), 1882, A., 607.

6-bromo- (JACOBSEN), 1882, A., 185; (KELEE), 1882, A., 618.

6-chloro- and 6-bromo-, transformation of amido-*m*-toluic acid into (REMSEN and KUHARA), 1882, A., 607.

6-nitro- (REMSEN and KUHARA), 1882, A., 607.

***p*-Toluic acid** (v. GERICHTEN), 1878, A., 49; (BRUYLANTS), 1878, A., 158; (ADOR and CRAFTS), 1878, A., 405; (FISCHL), 1879, A., 638.

formation of, from *p*-toluenesulphonic acid (REMSEN), 1875, 1264.

preparation of, from *p*-toluidine (WEITH), 1873, 902.

conversion of, into *p*-toluidine (LOSSEN), 1875, 769.

2-bromo- (JANNASCH and DIECKMANN), 1874, 477; (MORSE and REMSEN), 1878, A., 405.

from *p*-toluic acid and bromine (BRÜCKNER), 1876, ii., 85.

(*Toluene compounds*  $Me=1$ .)

***p*-Toluic acid**, 2-chloro- (v. GERICHTEN), 1878, A., 49.

2-nitro-, from cymene (LANDOLPH), 1873, 1227.

fluoro- (PATERNO and OLIVIERI), 1882, A., 614.

2:6-dinitro- (BRÜCKNER), 1876, i., 925.

**Toluic acids**, nitro- (FITTICA), 1875, 265.

***p*-Toluic chloride** (ADOR and CRAFTS), 1878, A., 405.

**Toluidine** (LANDGREBE), 1878, A., 217. heat of formation of (RAMSAY), 1879, T., 696.

action of carbonic oxide on (GARNITSCH-GARNITZKY), 1878, A., 217. action of chloroacetic chloride on (TOMMASI), 1873, 911.

crude, estimation of *m*-toluidine in (WURSTER and RIEDEL), 1880, A., 110.

***o*-Toluidine** (LORENZ), 1875, 80.

secondary amines formed by the action of liquid, on aniline hydrochloride (GIRARD and WILLM), 1876, ii., 98.

action of hydrogen dioxide on (LEEDS), 1882, A., 502.

action of, on *o*-toluidine-*m*-sulphonic acid (NEVILLE and WINTHER), 1880, T., 631.

oxidation of, by potassium permanganate (HOOGWERFF and VAN DORP), 1878, A., 973.

compounds, results of fusing, with aniline compounds (BIBANOFF), 1874, 1190.

compounds of, with mercuric bromide and iodide (KLEIN), 1880, A., 632.

derivatives (GIRARD), 1873, 912; (LADENBURG), 1878, A., 54;

(STAATS), 1880, A., 386.

ferrocyanides (EISENBERG), 1881, A., 261.

sulphate, action of heat on (NEVILLE and WINTHER), 1880, T., 625.

action of potassium dichromate on (PERKIN), 1879, T., 728.

oxidation of a mixture of aniline sulphate and (PERKIN), 1879, T., 728.

separation of, from *p*-toluidine (BINDSCHEDLER), 1873, 911.

***o*-Toluidine**, 4-bromo- (HÜBNER and ROOS), 1874, 165.

4- and 5-bromo-, and their derivatives (WROBLEWSKI), 1874, 51.

3:5:4-dibromiodo- (WROBLEWSKI), 1878, A., 978.



(*Toluene compounds*  $Me=1$ .)

*o*-Toluidine, 5:3-bromonitro- (WROBLEWSKI), 1878, A., 977.

5:3- and 3:5-bromonitro- (NEVILLE and WINTHER), 1880, T., 432.

4-chloro- (ENGELBRECHT), 1874, 986.

4:6-dichloro- (WROBLEWSKI), 1874, 56.

6-nitro- (CUNERTII), 1874, 902; 1875, 82.

3:5-dinitro- (STAEDTL), 1881, A., 724; (KAYSER), 1882, A., 1203.

*m*-Toluidine (LIMPRICHT), 1874, 901; (LORENZ), 1875, 80; (WROBLEWSKI), 1878, A., 977; (WIDMAN), 1880, A., 635.

preparation of (VIENNE and STEINER), 1881, A., 721; (WIDMAN), 1882, A., 47.

preparation of, from commercial aniline (SCHAD), 1874, 377.

ferrocyanides (EISENBERG), 1881, A., 261.

estimation of, in crude toluidine (WURSTER and RIEDEL), 1880, A., 110.

*m*-Toluidine, 4- and 6-bromo-, and their derivatives (WROBLEWSKI), 1874, 53; (HÜBNER and ROOS), 1874, 165.

5-bromo- (WROBLEWSKI), 1878, A., 977.

preparation of orcinol from (NEVILLE and WINTHER), 1882, T., 420.

6-bromo-, preparation of (NEVILLE and WINTHER), 1880, T., 431.

5:6-dibromo- (NEVILLE and WINTHER), 1880, T., 434.

2:4:6-tribromo- (WROBLEWSKI), 1874, 53; (LIMPRICHT), 1874, 901; (NEVILLE and WINTHER), 1880, T., 440.

5:6-bromonitro- (NEVILLE and WINTHER), 1880, T., 630.

4-chloro- (ENGELBRECHT), 1874, 986.

6-chloro- (WROBLEWSKI), 1874, 55.

5-nitro- (BECKER), 1882, A., 1197.

preparation of (NEVILLE and WINTHER), 1882, T., 416.

*p*-Toluidine, conversion of *p*-toluic acid into (LOSSEN), 1875, 769.

action of benzotrichloride on (STEBBINS), 1880, A., 380.

action of, on chloral (WALLACH), 1875, 350.

action of hydrogen dioxide on (LEEDS), 1882, A., 502.

oxidation of, by potassium permanganate (HOOGWERFF and VAN DORP), 1878, A., 297, 973.

oxidation product of (BARSILOWSKY), 1874, 273; 1878, A., 300; 1879, A., 237; 1881, A., 432.

(*Toluene compounds*  $Me=1$ .)

*p*-Toluidine, some products of the oxidation of (PERKIN), 1880, T., 546.

compounds of, with mercuric bromide and iodide (KLEIN), 1880, A., 632.

derivatives (STAATS), 1880, A., 386.

cobalt chloride (LIPPMANN and VORTMANN), 1879, A., 461.

hydrochloride, heat of formation of (LUGININ), 1879, A., 871.

mucate (KÖTTNITZ), 1873, 165.

dry distillation of (LICHTENSTEIN), 1881, A., 721; 1882, A., 178.

platinocyanide (SCHOLZ), 1881, A., 708.

sulphate, action of potassium dichromate on (PERKIN), 1879, T., 728.

oxidation of a mixture of aniline sulphate and (PERKIN), 1879, T., 728.

silver sulphate and nitrate (MIXTER), 1881, A., 1129.

sulphatoperiodide (JÖRGENSEN), 1877, i., 716.

separation of, from *o*-toluidine (BINDSCHEDLER), 1873, 911.

*p*-Toluidine, 2-bromo-, preparation of (NEVILLE and WINTHER), 1881, T., 85.

3(?)-bromo-, formation of (v. PECHMANN), 1875, 79.

3-bromo- and 3:5-dibromo- (WROBLEWSKI), 1874, 51.

3:5-dibromo- (MAZZARA), 1880, A., 879.

2:3:5-tribromo-, preparation of (NEVILLE and WINTHER), 1881, T., 85.

tetrabromo-, preparation of (NEVILLE and WINTHER), 1881, T., 85.

3:5-bromonitro- (WROBLEWSKI), 1878, A., 977.

2- and 3-chloro- (WROBLEWSKI), 1874, 55.

3:5-diiodo- (MICHAEL and NORTON), 1878, A., 407.

*m*-nitro- (FRIEDERICI), 1879, A., 311.

2-nitro-, crystalline form of (PANE-BIANCO), 1880, A., 105.

silver nitrate (MIXTER), 1881, A., 1130.

3:5- and 2:6-dinitro- (BEILSTEIN), 1880, A., 635.

*ψ*-Toluidine. See *o*-Toluidine.

Toluidines, some derivatives of (NEVILLE and WINTHER), 1881, T., 84.

carbamides derived from (COSACK), 1880, A., 245.

succinyl-compounds of (DE BECHI), 1879, A., 461, 527.

(*Toluene compounds*  $Mc=1$ .)

2-Toluidine-3:5-disulphonic acid, position of the sulphonic group in, and preparation of orcinol from (NEVILLE and WINTHER), 1882, T., 421.

4-Toluidine-2:3-disulphonic acid (v. PECHMANN), 1875, 80.

Toluidinesulphonic acid, a new (HAYDUCK), 1875, 1030.

Toluidine-2-sulphonic acid, 4-bromo- (LIMPRICHT), 1875, 265; (SCHÄFER), 1875, 369, 462.

Toluidine-3-sulphonic acid, 4- and 6-bromo- (LIMPRICHT), 1875, 264; (SCHÄFER), 1875, 369, 462.

*o*-Toluidinesulphonic acids and dibromo- (LIMPRICHT), 1874, 73; 1875, 368; (GERVER), 1874, 166.

2-Toluidine-3-sulphonic acid (v. PECHMANN), 1875, 80.

2-Toluidine-4-sulphonic acid (LIMPRICHT), 1874, 904; 1875, 268; (WECKWARTH), 1874, 1093; (HAYDUCK), 1874, 1094; 1875, 461.

3:5-dibromo- (HAYDUCK), 1874, 1095; 1875, 462; (LIMPRICHT), 1875, 268.

2-Toluidine-5-sulphonic acid (LIMPRICHT), 1874, 73; 1875, 368; (GERVER), 1874, 166; (PAGEL), 1875, 897; (NEVILLE and WINTHER), 1880, T., 625.

constitution of, and action of *o*-toluidine on (NEVILLE and WINTHER), 1880, T., 631.

3-bromo- (NEVILLE and WINTHER), 1880, T., 627.

3-Toluidine-2-sulphonic acid (LIMPRICHT), 1874, 901; (LORENZ), 1875, 81.

3-Toluidine-4-sulphonic acid (HAYDUCK), 1875, 461.

*p*-Toluidinesulphonic acids (LIMPRICHT), 1874, 991.

4-Toluidine-2-sulphonic acid (JENSSEN), 1874, 479; 1875, 77; (WECKWARTH), 1874, 1093.

nitrodiazo-compound of (PAGEL), 1875, 899.

bromo- (JENSSEN), 1874, 480.

formation of (JENSSEN), 1875, 77.

4-Toluidine-3-sulphonic acid (v. PECHMANN), 1875, 78; (NEVILLE and WINTHER), 1880, T., 625.

6-bromo- (v. PECHMANN), 1875, 79.

*p*-Toluo-*o*-nitranilide and *p*-toluo-*m*-nitro-*p*-toluidide (HÜBNER), 1882, A., 504.

*p*-Toluo-nitrile and some of its derivatives (PATERNO and SPICA), 1875, 642.

conversion of, into ditolylthiocarbimide (WEITH), 1873, 903.

(*Toluene compounds*  $Mc=1$ .)

*p*-Toluo-thiamide (PATERNO and SPICA), 1875, 642.

*p*-Toluoxy-lidide, and nitro- (BRÜCKNER), 1881, A., 94; (HÜBNER), 1882, A., 504.

*p*-Toluo-ylacrylic acid (v. PECHMANN), 1882, A., 1074.

Toluo-ylbenzoic acid (WEILER), 1875, 151; (ADOR and CRAFTS), 1878, A., 405.

*p*-Toluo-yl-*o*-benzoic acid, and its salts (FRIEDEL and CRAFTS), 1881, A., 731.

*p*-Toluo-ylcarboxylic acid, and some of its salts (ROSER), 1882, A., 194.

Toluo-quinhydrone (NIETZKI), 1877, ii., 476.

Toluo-quinol (2:5-dihydroxytoluene; hydro-toluo-quinol) (NIETZKI), 1877, ii., 476; (NEVILLE and WINTHER), 1882, T., 423.

preparation of (NIETZKI), 1878, A., 315.

action of potassium hydrogen carbonate on (BRUNNER), 1881, A., 1441.

derivatives of (NIETZKI), 1878, A., 868.

tetrachloro- (BRÄUNINGER), 1878, A., 147.

Toluo-quinolcarboxylic acid. See Dihydroxytoluic acid.

Toluo-quinoline. See Methylquinoline.

Toluo-quinone (NIETZKI), 1877, ii., 475; 1878, A., 794.

preparation of (NIETZKI), 1878, A., 315.

3:4:6-trichloro-, action of ammonia and amines on (v. KNAPP and SCHULTZ), 1882, A., 510.

tetrachloro- (BRÄUNINGER), 1878, A., 146.

nitro- (ETARD), 1881, A., 583.

formation of (ETARD), 1877, ii., 476.

*iso*-Toluo-quinone (SPICA), 1882, A., 1065.

$\alpha$ -Toluo-ylamide. See Phenylacetamide.

Toluo-ylene. See Toluene.

*p*-Tolyl benzyl ketone (*methyldeoxybenzoin*) (MANN), 1881, A., 1034.

*m*-Tolyl benzyl oxide (ORTH), 1882, A., 1204.

Tolyl benzyl oxides, *o*- and *p*- (STAEDEL), 1881, A., 724.

Tolyl ethyl ether. See Ethoxytoluene.

Tolyl ethyl *disulphoxide*. See Ethylic toluene-*p*-thiosulphonate.

*o*-Tolyl ethylene ether. See Ethylene-oxytoluene.

*p*-Tolyl methyl ketone (MICHAELIS), 1882, A., 970.

*o*-Tolyl mercaptan, and bromo- (HÜBNER and POST), 1874, 58.

(*Toluene compounds*  $Mc=1$ .)

*m*-Tolyl mercaptan (HÜBNER and POST), 1874, 60.

*p*-Tolyl mercaptan, preparation of (SCHILLER and OTTO), 1877, i., 306.

action of chlorosulphonic acid on (BECKURTS and OTTO), 1879, A., 230.

action of sulphuric acid on (OTTO), 1880, A., 810.

Tolyl mercaptans, amido- (HESS), 1881, A., 596.

*p*-Tolylacetamidine (*ethenyltolylamidine*) (BERNTSEN and TROMPETTER), 1879, A., 146.

Tolylacetic acids, *o*- and *p*-, and their salts (RADZISZEWSKI and WISPEK), 1882, A., 1283.

*o*-Tolylamidoacetic acid (*o*-tolylglycocine) (STAATS), 1880, A., 387; (COSACK), 1880, A., 713.

*p*-Tolylamidoacetic acid (*p*-tolylglycocine; *p*-tolylglycine), and its derivatives (MEYER), 1876, i., 401; (SCHWEBEL), 1878, A., 302.  
preparation of (MEYER), 1882, A., 519.

Tolylamine. See Toluidine.

Tolylarsenic acids, *o*- and *p*-, and their salts (LA COSTE and MICHAELIS), 1879, A., 163; 1880, A., 397.

Tolyl-arsenic and -arsenious chlorides, *o*- and *p*- (LA COSTE and MICHAELIS), 1879, A., 163.

*p*-Tolylarsenious oxide (LA COSTE), 1881, A., 904.

Tolylarsenious oxides, *o*- and *p*- (LA COSTE and MICHAELIS), 1879, A., 163; 1880, A., 397.

Tolylbenzamidine, amido- (BERNTSEN and TROMPETTER), 1879, A., 147.

*p*-Tolylbenzylcarbinol (MANN), 1881, A., 1035.

*p*-Tolylbenzylsulphone (OTTO), 1880, A., 811.

Tolylbisthioglycollic acid (GABRIEL), 1880, A., 33.

*p*-Tolylboric acid and chloride (MICHAELIS and BECKER), 1882, A., 732.

Tolylbutane. See *iso*Butyltoluene.

Tolylcarbamide (SCHWEBEL), 1878, A., 798.

*p*-Tolylcarbamide (STEINER), 1875, 882.

Tolylcarbamides, *o*-, *m*- and *p*- (COSACK), 1880, A., 245, 713.

Tolylchloracetamide, and the action of ammonia on (TOMMASI), 1874, 623.

*p*-Tolyltrimethylsulphonamide (BEHREND), 1882, A., 1283.

(*Toluene compounds*  $Mc=1$ .)

Tolyleneanisaldehydine (LADENBURG and RÜGHEIMER), 1879, A., 234.

Tolylenebenzaldehydine and its ethiodide and methiodide (LADENBURG), 1878, A., 571.

Tolylene-blue, reduction of, and its leuco-compound (WITT), 1879, T., 360.

Tolylenediamine (*diamidotoluene*) hydrochloride (FRIEDERICI), 1879, A., 311.

Tolylene-2:4-diamine and its derivatives (LUSSY), 1875, 274, 770, 1036; (LADENBURG), 1876, i., 401; (HELL and SCHOOP), 1879, A., 715.  
bromo- and nitro- (RUHEMANN), 1882, A., 392.

Tolylene-2:5-diamine (NIETZKI), 1877, ii., 475; 1880, A., 162; (LADENBURG), 1879, A., 232.

Tolylene-3:4-diamine, reactions of, with benzaldehyde, phthalaldehyde, and formic acid (LADENBURG), 1877, ii., 752.

compounds of, with salicylaldehyde (LADENBURG), 1878, A., 572.

derivatives of (LADENBURG and RÜGHEIMER), 1879, A., 715.

Tolylenediamines (NIETZKI), 1880, A., 162.

Tolylene-2:4-diaminesulphonic acids (WIESINGER), 1874, 805.

Tolylene-2:6-diamine-4-sulphonic acid,  $\alpha$ -bromo- (SCHWANERT), 1877, ii., 471.

Tolylene-2:6-diamine-4-sulphonic chloride, bromide, nitrate, and sulphate (SCHWANERT), 1877, ii., 472.

Tolylenedibenzenyldiamidine (BERNTSEN and TROMPETTER), 1879, A., 147.

Tolylenediglycollic acid ("*diorcoxydiacetic acid*") and its salts (SAARBACH), 1880, A., 393.

Tolylene-5-dimethyl-2:5-diamine (WURSTER and RIEDEL), 1880, A., 109.

oxidation of (RIEDEL), 1880, A., 386.

Tolylenediurethane. See Ethylic tolylenedicarbamate.

Tolylene-ethenyldiamine (*ethenyltolylenediamine*) (HOBRECKER), 1873, 174; (LADENBURG and RÜGHEIMER), 1879, A., 716.

ethiodide (HÜBNER), 1882, A., 505.

Tolylenefururaldehydine and its salts (LADENBURG), 1878, A., 572; (LADENBURG and RÜGHEIMER), 1879, A., 234.

*o*-Tolylenehydratecarbonic anhydride. See  $\alpha$ -Benzylphthalide.

(Toluene compounds  $Me=1$ .)

**Tolylenepentenylidiamine** (*anhydrosalerylidiamidotoluene*) (FRIEDERICI), 1879, A., 312; (HÜBNER), 1882, A., 180.

**Tolylenetetramethyl-2:5-diamine** (WURSTER and RIEDEL), 1880, A., 109.

**m-Tolylenethiocarbamide and tolylene-dithiodicarbamide** (LUSSY), 1875, 274.

**Tolylenic isocyanate** (LUSSY), 1875, 274.

**Tolyethane, o-amido-** (*ethyl-o-amido-toluene*), and its derivatives (BENZ), 1882, A., 1284.

**Tolyethylbenzoic acid,  $\omega$ -trichloro-** (FISCHER), 1875, 155.

**p-Tolyethylsulphone** (OTTO), 1880, A., 511.

**p-Tolyethylthiocarbamate.** See Ethylic p-tolyl-mono- and di-thiocarbamates.

**Tolyethylthiocarbamides, o- and p-** (STAATS), 1880, A., 387.

**Tolyglycocine** (*tolyglycine*). See Tolylamidoacetic acid.

**Tolyglycollamide** (*tolyhydroxyacetamide*) (TOMMASI), 1874, 624.

**p-Tolyglyoxylic acid.** See Toluyl-carboxylic acid.

**o-Tolyguanidine** (ERLENMEYER), 1882, A., 191.

**Tolyguanidines and their cyanogen derivatives** (BERGER), 1880, A., 244.

**p-Tolyhydantoic acid** (SCHWEBEL), 1878, A., 798.

**p-Tolyhydantoin** (SCHWEBEL), 1878, A., 798.

**o-Tolyhydrazine and its salts** (BÖSLER), 1882, A., 1062.

**p-Tolyhydrazine** (FISCHER), 1875, 1035.

**Tolyhydroxyacetamide.** See Tolyglycollamide.

**Tolylic acetate, action of sodium on** (PERKIN and HODGKINSON), 1880, T., 489.

chloride. See Xylene,  $\omega$ -chloro-; cyanide. See Toluonitrile.

disulphoxide. See Tolylic toluene-p-thiosulphonate.

ethylic carbonates, o-, m- and p- (BENDER), 1881, A., 48.

$\alpha$ -thiobenzoate (SCHILLER and OTTO), 1877, i., 468.

toluene-p-thiosulphonate (PAULY and OTTO), 1877, i., 463; 1878, A., 414; 1879, A., 243.

measurement of the crystals of (OTTO), 1882, A., 533.

**p-Tolyimidodiacetic acid and its copper and silver salts** (MEYER), 1882, A., 519.

**p-Tolylmethylamine.** See p-Xylidine.

(Toluene compounds  $Me=1$ .)

**Tolylmethylthiocarbamates.** See Methylic o- and p-tolyl-mono- and di-thiocarbamates.

**p-Tolyl- $\beta$ -naphthylamine** (MERZ and WEITH), 1882, A., 179.

**Tolynaphthylethenylamidine** (WALLACH), 1877, i., 91.

**Tolyl- $\alpha$ - and - $\beta$ -naphthylthiocarbamides, o- and p-, and their decomposition by hydrochloric acid** (MAINZER), 1882, A., 1212.

**Tolyloxamethane.** See Ethylic tolyloxamate.

**p-Tolyloxamic acid** (KLINGER), 1877, i., 712.

**Tolyloxymethylenephthalide** (GABRIEL), 1881, A., 733.

**Tolylphenol** (MAZZARA), 1880, A., 161.

**Tolylphenyl.** See Methylidiphenyl.

**Tolylphenyl-.** See Phenyltolyl-.

**p-Tolylphosphine** (MICHAELIS and PANEK), 1882, A., 963.

**Tolylphosphinic acid.** See Toluene-phosphinic acid.

**p-Tolylphosphonium iodide** (MICHAELIS and PANEK), 1882, A., 963.

**Tolylphosphorous acid.** See Toluene-phosphonic acid.

**p-Tolylpyrroline** (LICHTENSTEIN), 1882, A., 178.

**Tolylquinines** (CLAUS and BOTTLER), 1881, A., 620.

**Tolylsalicylic acid** (WILLIAMS), 1878, A., 576.

**Tolyl-series, amidoazo-compounds in the** (NIETZKI), 1877, ii., 453, 767.

**Tolylsuccinic acids, o- and p-** (DE BECHI), 1879, A., 527.

**Tolylsuccinamides, o- and p-** (DE BECHI), 1879, A., 527.

**Tolylsuccinimides, o- and p-** (DE BECHI), 1879, A., 461, 527.

**p-Tolylsuccinimide, and 2-nitro-** (TAYLOR), 1876, i., 602.

**p-Tolylsulphoneacetic acid** (GABRIEL), 1881, A., 716.

**Tolylsulphuric acids** (BAUMANN), 1877, i., 206; 1879, A., 149.

**p-Tolylthiocarbamide** (DE CLERMONT and WEHRLIN), 1877, i., 70.

**Tolylthiocarbamides, o- and p-** (STAATS), 1880, A., 386.

**o-Tolylthiocarbimide, and the action of chlorine on** (LACHMANN), 1879, A., 935.

**m-Tolylthiocarbimide, desulphuration of, with copper-dust** (WEITH), 1873, 902.

**Tolylthiocarbimideglycollides, o- and p-** (VÖLTZKOW), 1881, A., 43.



(*Toluene compounds*  $Me=1$ .)

- p*-Tolythiohydantoin (MEYER), 1878, A., 295.
- Tolythiourethane (LIEBERMANN and NATANSON), 1881, A., 45.
- "Tolytri-*p*-tolylene triamine" (PERKIN), 1880, T., 552.
- o*-Tolylurethane (COSACK), 1880, A., 245.
- m*-Tolylurethane (COSACK), 1880, A., 713.
- Tomatoes, tinned, composition of (WIGNER), 1881, A., 212.
- Tonga (GERRARD), 1880, A., 836.
- Tong-Yeou (*Elaeococca Vernicia*, oil-tree of China), constituents of the seed of (CLOËZ), 1876, i., 616; ii., 102.
- Topaz (KLEMM), 1874, 665; (FRENZEL), 1882, A., 473.
- Russian (SELIGMANN), 1881, A., 694.
- and corundum, inferences as to the formation of (HARTLEY), 1876, ii., 248.
- behaviour of, at high temperatures (RAMMELSBERG), 1879, A., 772.
- fluid enclosures in (ERHARD and STELZNER), 1881, A., 25.
- Torbanite, formation and constitution of (SKEY), 1875, 435.
- inorganic constituents of (DIXON), 1881, A., 988.
- Torpedoes, lecture-experiments on (v. BASAROFF), 1877, ii., 275.
- Torsion, elasticity of (PISATI), 1877, i., 39.
- Touchstone. See Lydian stone.
- Tourmaline (ROSTER), 1878, A., 282.
- from Chili and from the Hörblberg (VOM RATH), 1881, A., 550.
- as a transformation-product of corundum (GENTH), 1874, 1068.
- electrical phenomena of (J. and P. CURIE), 1881, A., 339.
- black and green (GORCEIX), 1878, A., 118.
- Towns, cleansing of (FISCHER), 1874, 400; 1878, A., 813.
- Toxicological cases, detection of zinc in (RAOULT and BRETON), 1877, ii., 928; (OTTO), 1881, A., 194.
- Toxicological investigations (SELMÉ), 1873, 1165; 1874, 607; (POLECK and BIEFEL), 1878, A., 906; 1881, A., 853.
- See also Physiological action and Poisoning.
- Toxiresin (SCHNIEDEBERG), 1875, 1266.
- Trachyte, composition of (HILGER), 1877, ii., 853.
- from Wölfelringen in the Westerwald, composition of (HILGER), 1878, A., 208.
- Trachyte, solvent action of gypsum on (COSSA), 1873, 1202.
- minerals contained in certain, from the ravine of Riveau Grande, at Mont Dore (GONNARD), 1880, A., 225.
- angitic, of the Andes (ARTOFÉ), 1874, 559.
- of the Tokaj-Eperieser-Gebirge (DOELTER), 1875, 624.
- Transpiration of plants. See under Agricultural Chemistry.
- Trap, some amorphous forms of (TÜRNEBOHM), 1875, 1170.
- Trap rocks of Connecticut (DANA), 1875, 874; 1880, A., 536; (HAWES), 1876, i., 350.
- Trees. See under Agricultural Chemistry.
- Trehalose from Fungi (MÜNTZ), 1873, 759; 1875, 380.
- Tremolite (*byssolite*; *grammatite*) (v. ZEPHAROVICH), 1879, A., 364; 1881, A., 996; (SCHMID), 1882, A., 582.
- a variety of, called Goldsmith's hexagonite (KÖNIG), 1877, ii., 720.
- Trenching, influence of, on the temperature and moisture of soil (WOLLNY), 1881, A., 60.
- Triacetaldehydes, *trithio*-,  $\alpha$ - and  $\beta$ - (KLINGER), 1877, ii., 305; 1878, A., 720.
- Triacetic acid, potassium and sodium salts of (LESCŒUR), 1874, 870.
- Triacetin. See Glyceryl triacetate.
- Triacetonalkamine (*hydroxytetramethyl-hexahydropyridine*) and  $\psi$ -triacetonalkamine, formation of, and their salts (HEINTZ), 1877, i., 592.
- Triacetonamine and some of its salts (HEINTZ), 1874, 1081; 1875, 351; 1876, i., 382.
- products of oxidation of (HEINTZ), 1880, A., 101.
- alcohol-bases formed by the hydrogenisation of (HEINTZ), 1877, i., 592.
- regeneration of diacetonamine from, and formation of a fifth acetone base (HEINTZ), 1876, ii., 292.
- chromates (HEINTZ), 1880, A., 101.
- nitrosamine (HEINTZ), 1877, ii., 428.
- decomposition of, by acids (HEINTZ), 1877, ii., 583.
- iso*Triacetonamine, a new acetone base (HEINTZ), 1876, i., 383.
- Triacetonediamine (HEINTZ), 1881, A., 420.
- 1:2:4-Triacetoxyanthraquinone (SCHÜNCK and ROEMER), 1877, i., 673; ii., 625; (ANON.), 1878, A., 737.

- 1:2:2'-Triacetoxyanthraquinone (PERKIN), 1873, 430.  
melting-point of (SCHUNCK and ROEMER), 1878, A., 322.
- 1:2:3'-Triacetoxyanthraquinone (SCHUNCK and ROEMER), 1878, A., 322.
- Triacetyldiphenylphthalide (v. PECHMANN), 1882, A., 184.
- Triacetoxyquinone (MERZ and ZETTER), 1880, A., 114.
- Triacetylaurin (CARO and GRAEBE), 1878, A., 794.
- Triacetylcerulein (v. BUCHKA), 1882, A., 62.
- Triacetylcotoin (v. JOBST and HESSE), 1880, A., 326.
- Triacetylglycerol. See Glyceryl triacetate.
- Triacetylhydroxychrysazin (LIEBERMANN and GIESEL), 1876, ii., 90.
- Triacetylhydrocyanorosolic acid (CARO and GRAEBE), 1878, A., 794.
- Triacetylleucaurin (DALE and SCHORLEMMER), 1873, 440; (ZULKOWSKI), 1881, A., 900.
- Triacetylleucorosolic acid (GRAEBE and CARO), 1876, i., 590; 1878, A., 794.
- Triacetylphenylphthalol (v. BAEYER), 1880, A., 655.
- Triacetylphlobaphen (BÖTTINGER), 1880, A., 650.
- Triallylamine (GROSHEINTZ), 1879, A., 780; (PINNER), 1880, A., 99.  
active and inactive, and some of their salts (PLIMPTON), 1881, T., 333; A., 34.
- Triisocamylcarbamide (CUSTER), 1879, A., 913.
- Triisocamylphosphine and its oxide (v. HOFMANN), 1873, 883.
- Trianosperma jicifolia* (Tayuya) (ANON.), 1876, i., 431; (PARODI), 1880, A., 721.
- Trianospermine (PARODI), 1880, A., 722.
- Tribenz-arsenious and -arsinic acids (LA COSTE), 1881, A., 905.
- $\beta$ -Tribenzhydroxylamine, crystalline form of (KLEIN), 1873, 585.
- Tribenzhydroxylamines (LOSSEN), 1875, 634; 1877, ii., 328; (STEINER), 1876, i., 270.
- 1:2:2'-Tribenzoxanthraquinone (PERKIN), 1873, 430.
- Tribenzoyl-2:4-diamidophenol (STUCKENBERG), 1877, ii., 193.
- o*-Tribenzoylbenzene (GABRIEL and MICHAEL), 1878, A., 734; (GABRIEL), 1881, A., 733.
- Tribenzoylleucaurin (DALE and SCHORLEMMER), 1873, 441.
- Tribenzoylmorphine (POLSTORFF), 1880, A., 407.
- Tribenzoylphlobaphen (BÖTTINGER), 1880, A., 650.
- Tribenzoylrhamnetin (LIEBERMANN and HOERMANN), 1879, A., 272.
- Tribenzylamine (SPICA), 1881, A., 262.  
*tri*amido- and *tri-p*-nitro- (STRAKOSCH), 1874, 78.  
*tri-p*-bromo- (JACKSON and LOWERY), 1882, A., 170.  
*tri-p*-chloro-, and its salts (JACKSON and FIELD), 1881, A., 804.  
*tri-p*-iodo- (MABERY and JACKSON), 1878, A., 422.
- Tribenzylmethyllammonium methyl sulphate (CLAËSSON and LUNDVALL), 1881, A., 241.
- Tribenzylphosphine (LETTS and COLLIE), 1882, A., 726.  
oxide and its salts (FLEISSNER), 1881, A., 263; (LETTS and COLLIE), 1881, A., 722; 1882, A., 724.
- Tributylamine and its butyl iodide (LIEBEN and ROSSI), 1873, 367.
- Triisobutylamine (SACHTLEBEN), 1878, A., 849.  
boiling point of (LADENBURG), 1879, A., 704.  
butyl iodide (SACHTLEBEN), 1878, A., 850.
- Triisobutylene (*dodecylene*) (LERMONTOFF), 1878, A., 963; (DOBBIN), 1880, T., 241; (BUTLEROFF), 1880, A., 230.  
oxidation of (BUTLEROFF), 1880, A., 230.
- Triisobutylidenediamine (*hydrotbutyramide*), and the action of hydrocyanic acid on (LIPP), 1882, A., 164.
- Triisobutylphosphine hydriodide (v. HOFMANN), 1873, 882.
- Tricalcium phosphate. See under Calcium.
- Tricarballic acid (MIEHLE), 1878, A., 490; (CLAUS), 1878, A., 856; (ANON.), 1880, A., 864; (CLAUS and LISCHKE), 1881, A., 800.  
occurrence of, in beet-juice (v. LIPPMANN), 1878, A., 662; 1880, A., 36.  
formation of (CLAUS), 1876, i., 934.  
See also Propanetricarboxylic acid.
- Tricarbinols (KOLBE), 1881, A., 82.
- Tricarboxypyridenic acid. See Pyridine-tricarboxylic acid.
- p*-Tricarboxytriphenylarsine and its hydride (LA COSTE), 1881, A., 905.

- iso*Trichlorhydrin. See Propane, *ααγ-trichloro-*.
- Tricodaine (WRIGHT), 1874, 107.
- Tricresyl-. See Tritolyl-.
- Tricrotonylenamine, and its salts (WURTZ), 1879, A., 780.
- Tridecoic acid (KRAFFT), 1880, A., 34.
- Tridymite (VOM RATH), 1873, 250; (HAUTEFEUILLE), 1878, A., 205.  
from the Enganean Hills, optical characters of (SCHUSTER), 1878, A., 945.  
from the Hargittastock, Siebenbürgen (DOELTER), 1877, ii., 720.  
from New Zealand (VOM RATH), 1881, A., 551.  
imbedded in rock-crystal (VRBA), 1873, 1012.  
conversion of the distillation-vessels of zinc-furnaces into zinc-spinel and (SCHULZE and STELZNER), 1881, A., 520.  
artificial production of (FRIEDEL and SARASIN), 1881, A., 384.  
optical properties and crystalline form of (V. LASAULX), 1879, A., 358, 605.  
crystallisation and twin formation of (VOM RATH), 1874, 1074.  
See also Silicon dioxide.
- 1:2:3-Triethoxybenzene (*triethylpyrogallol*) (V. HOFMANN), 1878, A., 870.  
*di-* and *tri-*nitro- (WESELSKY and BENEDIKT), 1882, A., 53.
- Triethylalkamine. See Hydroxytriethylamine.
- Triethylallylammonium bromide, influence of heat on (REBOUL), 1882, A., 709.
- Triethylamidoacetic anhydride (*triethylglycocine*) (BRÜHL), 1875, 1020.
- Triethylamine, action of, on acetylene dibromide (PLIMPTON), 1881, T., 537.  
action of, on the monohaloid paraffin-derivatives from secondary and tertiary alcohols (REBOUL), 1881, A., 1024.  
action of trimethylenic bromide on (ROTH), 1882, A., 501.  
derivatives (MEYER), 1877, ii., 877.  
ferrocyanide (FISCHER), 1878, A., 408.  
hydrobromide (PLIMPTON), 1881, T., 537.  
hydriodide (LADENBURG), 1882, A., 1194.  
platinocyanide (SCHOLZ), 1881, A., 707.
- Triethylazonium iodide (FISCHER), 1879, A., 450.
- Triethylbenzene (BALSOHN), 1879, A., 785.  
oxidation of (FRIEDEL and BALSOHN), 1881, A., 259.
- Triethyldicarbopyrrolamide (BELL), 1879, A., 525.
- "Triethylglycocine" and its derivatives (BRÜHL), 1875, 1020.
- Triethylxallylammonium salts (REBOUL), 1881, A., 1122.
- Triethylxamide (LETTS), 1881, A., 718.
- Triethylphosphine, action of bromoacetic acid on (LETTS), 1882, A., 721.  
action of chloroacetic acid and ethyl chloracetate on (LETTS), 1881, A., 717.  
oxide (LETTS), 1882, A., 720.
- Triethylphosphinoacetic anhydride (*triethylphosphobetaine*) and its ethylchloride (LETTS), 1881, A., 717.
- Triethylpyrogallol. See 1:2:3-Triethoxybenzene.
- Triethylselenium compounds (v. PIEVERLING), 1878, A., 130.
- Triethylsilicic and its sodium derivative (LADENBURG), 1873, 51.
- Triethylsulphine thallium iodide (JÖRGENSEN), 1873, 476.
- Triethyltellurium iodide (BECKER), 1876, ii., 46.
- Triethylthiocarbamide (GRODZKI), 1882, A., 823.
- Trigenic acid (HERZIG), 1882, A., 168.
- Triglycollic acid (GIACOSA), 1879, A., 930.
- Trihydrocyanic acid. See under Cyanogen.
- Trihydrostrychnine (GAL and ETARD), 1879, A., 387.  
*mono-*, *di-* and *tri-chloro-* (RICHT and BOUCHARDAT), 1881, A., 293.
- Trihydroxyacetophenone (*gallacetophenone*) (NENCKI and SIEBER), 1881, A., 811.  
colouring matter from (RASIŃSKI), 1882, A., 1288.
- Trihydroxyanthraquinone (DIEHL), 1878, A., 430.
- 1:2:4-Trihydroxyanthraquinone. See Purpurin.
- 1:2:2'-Trihydroxyanthraquinone. See Anthrapurpurin.
- 1:2:3'-Trihydroxyanthraquinone. See Flavopurpurin.
- 1:2:4'-(?)-Trihydroxyanthraquinone. See Oxanthrarufin.
- Trihydroxyanthraquinones, simultaneous formation of two (ROSENSTIEHL), 1877, i., 209.

- 1:2:3-Trihydroxybenzene. See Pyrogallol.
- 1:3:5-Trihydroxybenzene. See Phloroglucinol.
- Trihydroxybenzeneazobenzenesulphonic acid** (*azosulphorylbenzene-phloroglucinol*) (STEBBINS), 1880, A., 880; 1881, A., 41.
- 3:4:5-Trihydroxybenzoic acid. See Gallic acid.
- Trihydroxybenzophenone** (*salicyltresorcinol*) (MICHAEL), 1881, A., 592.
- Trihydroxybutane** (*butenylglycerol*) and its derivatives (LIEBEN and ZEISEL), 1881, A., 711.
- Trihydroxycholesterin**, diacetin and nitrous ether of (LATSCHINOFF), 1879, A., 129.
- Trihydroxydiphenylphthalide** (*phenylpyrogallolphthalcin*) (V. PECHMANN), 1882, A., 184.
- Trihydroxypicolinic acid** (*hydroxycoumaric acid*) (REIBSTEIN), 1882, A., 197.
- 2:4:5-Trihydroxypyridine. See Pyromecazonic acid.
- Trihydroxyquinone** (DIEHL and MERZ), 1878, A., 875; (MERZ and ZETTER), 1880, A., 114.  
bromo- (MERZ and ZETTER), 1880, A., 114.
- Trihydroxytoluquinone** (MERZ and ZETTER), 1880, A., 114.
- Trihydroxytrimethoxydiphenyl** (LIEBERMANN), 1875, 761.
- Trihydroxytriphenylcarbinol anhydride**. See Rosolic acid (*aurin*).
- 2:4:5-Trihydroxy-*m*-xylene (FITTIG), 1875, 637; (FITTIG and SIEPERMANN), 1876, i., 918.
- Trimellitic acid** (*benzene-1:2:4-tricarboxylic acid*) (V. BAAYER), 1873, 756; (KRINOS), 1878, A., 230; (HAMMERSCHLAG), 1878, A., 323; (EMMERLING), 1880, A., 265.  
formation of, by oxidation of colophony (SCHREDER), 1873, 889; 1874, 794.
- Trimellitic anhydride** (EMMERLING), 1880, A., 265.
- Trimesitic acid** (*pyridine-2:4:6-carboxylic acid*) (BÖTTINGER), 1881, A., 181.
- Trimesitylguanidine** (EISENBERG), 1882, A., 956.
- Trimethylacetic acid**. See Valeric acid.
- Trimethylamidoanisic anhydride** (*trimethylanisbetaine*) (GRIESS), 1873, 1146.
- Trimethyl-*o*-amidoanisyl iodide** (GRIESS), 1880, A., 638; (MÜHLHAUSER), 1882, A., 302.
- Trimethyl-*p*-amidoanisyl iodide** (GRIESS), 1880, A., 638.
- Trimethyltriamidobenzene** (WURSTER and SCHOBIG), 1880, A., 111.
- Trimethylamidobenzene-*p*-sulphonic acid** (GRIESS), 1880, A., 322.
- Trimethyl-*m*-amidobenzoic anhydride** (*benzobetaine*) (GRIESS), 1873, 1146.
- Trimethylamidophenol** and nitro-, and its iodide and salts (GRIESS), 1880, A., 636.
- Trimethylamidophenolammonium chloride** (GRIESS), 1880, A., 638.
- Trimethyl- $\alpha$ -amidopropionic anhydride** (*trimethyl- $\alpha$ -propiobetaine*) (BRÜHL), 1876, i., 698.
- Trimethylamidotriphenylmethane** (E. and O. FISCHER), 1879, A., 237.
- Trimethylamine** (VINCENT), 1878, A., 25, 400; 1879, A., 913; (DUVILLIER and BUISINE), 1879, A., 912; 1880, A., 159; 1881, A., 419, 1025; (EISENBERG), 1881, A., 83, 246.  
from beetroot molasses (VINCENT), 1880, A., 233.  
preparation of (DUVILLIER and BUISINE), 1881, A., 1027.  
constituents of commercial (DUVILLIER and BUISINE), 1879, A., 912; 1880, A., 159; 1881, A., 419, 1025; (VINCENT), 1879, A., 913.  
thermochemistry of (BERTHELOT), 1880, A., 787.  
action of, on acetylenic dibromide (PLIMPTON), 1881, T., 537.  
action of, on chloral (MEYER and DULK), 1873, 878.  
action of, on chlorhydrin (HANRIOT), 1879, A., 1031.  
action of an aqueous solution of, on metallic solutions (VINCENT), 1877, ii., 358.  
commercial, action of, on  $\beta$ -naphthol (HANTZSCH), 1881, A., 177.  
decomposition of haloid salts of, by heat (VINCENT), 1878, A., 25, 400.  
thiocarbamate (BLEUNARI), 1879, A., 305.
- Trimethylisoamylammonium chloride** (SCHMIEDEBERG and HARNACK), 1877, ii., 199.
- Trimethylanisbetaine**. See Trimethylamidoanisic anhydride.
- Trimethylbenzbetaine**. See Trimethyl-*m*-amidobenzoic anhydride.
- 1:2:4-Trimethylbenzene. See  $\psi$ -Cumene.
- 1:3:5-Trimethylbenzene. See Mesitylene.
- 2:4:5-Trimethylbenzoic acid ( $\psi$ -*cuminic acid*) (REUTER), 1878, A., 413.



- 3:4:5-Trimethylbenzoic acid. See Cumic acid ( *$\alpha$ -isoduryleic acid*).
- Trimethylcarbamine. See *tert.*-Butylamine.
- Trimethylcarbinol. See *tert.*-Butylic alcohol.
- Trimethylconylammonium hydrate (v. HOFMANN), 1881, A., 746.
- Trimethylene (FREUND), 1882, A., 154, 1273.
- Trimethylenehexamethyldiamine bromide (ROTH), 1882, A., 500.
- Trimethylenic bromide. See Propane,  *$\alpha$ -dibromo-*.  
chloride. See Propane,  *$\alpha$ -dichloro-*.  
chlorobromide. See Propane,  *$\alpha$ -chlorobromo-*.  
glycol. See *n*-Propylenic glycol.  
iodide. See Propane,  *$\alpha$ -diiodo-*.  
oxide. See *n*-Propylenic oxide.
- Trimethylethylmethane (*tert.-hexane*) (GARAINOFF), 1873, 43.
- Trimethylglutaric acid (*hexanedicarboxylic acid*), synthesis of (HELL and WITTEKIND), 1874, 683.
- Trimethylglyceramine (HANRIOT), 1878, A., 780.  
chloride (HANRIOT), 1879, A., 1031.
- Trimethylphosphine, new method of obtaining (DRECHSEL), 1875, 359.
- Trimethylpiperyl iodide (v. HOFMANN), 1881, A., 621.
- Trimethyl- $\alpha$ -propiobetaine. See Trimethyl- $\alpha$ -amidopropionic anhydride.
- 2:4:6-Trimethylpyridine ( *$\gamma$ -collidine*) (WISCHNEGRADSKY), 1880, A., 54.
- Trimethylpyrrolidine in Dippel's oil (CIAMICIAN and DENNSTEDT), 1882, A., 529.
- Trimethylresorcinol (*mesorcinol*) (KNECHT), 1882, A., 728, 1200.
- Trimethylrhannetin (LIEBERMANN and HOERMANN), 1879, A., 272.
- Trimethylpararosanine from aurin (DALE and SCHORLEMMER), 1879, T., 562; A., 926.
- Trimethylselenium iodide (JACKSON), 1875, 154; 1876, i., 581.
- Trimethylsulphine, action of heat on the salts of (BROWN and BLAICKIE), 1882, A., 592.  
iodide (SCHÖLLER), 1875, 258; (CLAËSSON), 1878, A., 39; (KLINGER), 1878, A., 128, 132.  
formation of (KLINGER), 1882, A., 1045.
- Trimethyl-*p*-tolylammonium iodide (THOMSEN), 1878, A., 218.
- Trimorphine, action of hydrochloric acid on, and physiological action of (MAYER and WRIGHT), 1873, 224.
- Trinaphthylenediamine (SALZMANN and WICHELHAUS), 1876, ii., 528.
- Tri- $\beta$ -naphthyllic phosphate (WEBER and HEIM), 1882, A., 839.
- Trioxydipropylacetolactone. See Tetrahydroxyoctoic lactone.
- Trioxymaleic acid, Tanatar's. See *i*-Tartaric acid.
- Trioxymethylene. See Paraformaldehyde under Formaldehyde.
- Triphane. See Spodumene.
- Triphenolcarbinol anhydride. See Rosolic acid (*aurin*).
- Triphenolmethane. See Leucaurin.
- Triphenylacetic acid and its nitrile (E. and O. FISCHER), 1879, A., 326, 385.
- Triphenylamine (MERZ and WEITH), 1874, 376.  
formation of, by the action of bromobenzene on aniline (MERZ and WEITH), 1873, 73.
- Triphenylarsine and its derivatives (LA COSTE and MICHAELIS), 1879, A., 162; 1880, A., 397.
- Triphenylbenzene (ENGLER and HEINE), 1873, 1036; (ENGLER and BERTHOLD), 1875, 63.  
formation of (ENGLER), 1875, 889.  
vapour-density of (KNECHT), 1880, A., 679.  
perchlorination of (MERZ, ZETTER, RUOFF and MOË), 1879, A., 721.
- Triphenylbenzylmethane. See Tetraphenylethane.
- Triphenylcarbinol, preparation of (E. and O. FISCHER), 1882, A., 62.  
*p*-diamido- (DOEBNER), 1882, A., 957.  
tri-amido-. See *para*-Rosaniline.  
*p*-trinitro- (E. and O. FISCHER), 1879, A., 384.
- Triphenylcarbinol-*o*-carboxylic acid (v. BAeyer), 1880, A., 650.
- Triphenylene (SCHMIDT and SCHULTZ), 1881, A., 435.
- Triphenylethane (WAAS), 1882, A., 1209.
- Triphenylethylamine and its hydrochloride (SPICA), 1880, A., 241.
- Triphenylglyoxaline (*lophine*; *benzotolene*; *benzostilbene*) (RADZISZEWSKI), 1877, ii., 887; (FISCHER and TROSCHKE), 1881, A., 51; (RAU), 1881, A., 591; (JAPP and ROBINSON), 1882, T., 328.  
constitution of (JAPP and ROBINSON), 1882, T., 323.  
and allied compounds, constitution of (RADZISZEWSKI), 1882, A., 1063.  
hydrobromide, action of bromine on (FISCHER and TROSCHKE), 1881, A., 51.

- $\alpha$ -Triphenylguanidine**, action of carbonyl chloride on (MICHLER and KELLER), 1882, A., 182.
- m*-nitro-**, formation of, by desulphuration of nitrodiphenylthiocarbamide in presence of aniline (BRÜCKNER), 1875, 166.
- Triphenylguanidines**,  $\alpha$ - and  $\beta$ -dicyano- (LANDGREBE), 1878, A., 217; 1879, A., 53.
- Triphenylic phosphate** (JACOBSEN), 1876, i., 596; (WEBER and HEIM), 1882, A., 839.
- Triphenylmelaniline**, action of hydrochloric acid on (v. HOFMANN), 1878, A., 301.
- Triphenylmethane** (KEKULÉ and FRANCHIMONT), 1873, 171; (THÖRNER and ZINCKE), 1878, A., 425; (E. and O. FISCHER), 1878, A., 576; 1879, A., 326, 384; 1882, A., 62.
- preparation of (SCHWARZ), 1881, A., 912; (FRIEDEL and CRAFTS), 1882, A., 621.
- synthesis of (v. HEMILIAN), 1875, 152.
- colour reaction of, with antimony trichloride (SMITH), 1879, A., 831.
- derivatives of (MELDOLA), 1882, T., 188.
- compounds of, with phenolphthalein (v. BAEYER), 1880, A., 653.
- chloride (E. and O. FISCHER), 1879, A., 384.
- cyanide (E. and O. FISCHER), 1879, A., 326.
- amido-, and its salts (FISCHER and ROSER), 1880, A., 661.
- di*amido-, and its salts (FISCHER), 1880, A., 39, 661; 1881, A., 589; 1882, A., 823; (BÖTTINGER), 1880, A., 813.
- colouring matter from, and compound of, with benzene (FISCHER), 1880, A., 662.
- tri*amido-. See Leucaniline.
- chloro-, constitution of the hydrocarbon derived from (v. HEMILIAN), 1878, A., 738.
- tri*nitro- (E. and O. FISCHER), 1879, A., 384.
- m*-nitro-*di*-*p*-amido-, oxidation of (FISCHER and ZIEGLER), 1880, A., 633.
- p*-nitro-*di*-*p*-amido- (FISCHER), 1882, A., 833.
- Triphenylmethane-*o*-carboxylic acid** and dichloro- (v. BAEYER), 1880, A., 650.
- Triphenylmethylphosphonium iodide** (MICHAELIS and GLEICHMANN), 1882, A., 1063.
- Triphenylphosphine** and its derivatives (MICHAELIS and GLEICHMANN), 1882, A., 1062.
- preparation of (MICHAELIS and REESE), 1882, A., 1287.
- oxide and sulphide (MICHAELIS and GLEICHMANN), 1882, A., 1063.
- Triphenylphosphonium hydroxide** (MICHAELIS and GLEICHMANN), 1882, A., 1063.
- Triphenylosaniline** (DALE and SCHORLEMMER), 1879, T., 159.
- Triphloreotide**, formation of (SCHIFF), 1875, 66.
- Triphylite** (*triphyline*) (VOM RATH), 1881, A., 550.
- chemical composition of (PENFIELD), 1877, ii., 714; 1879, A., 695.
- Triplite**, formula of (KENNGOTT), 1875, 616.
- See also Manganese phosphate.
- Triploidite** (BRUSH and DANA), 1879, A., 20; 1881, A., 230.
- Triplite** of Barbadoes (PHIPSON), 1877, i., 177.
- Scottish (PATERSON), 1877, ii., 174.
- compared with gypsum (v. LANGENBECK), 1882, A., 116.
- earthy (SCHARIZER), 1881, A., 545.
- "**Tripolith**" (PETERSEN), 1882, A., 247.
- Trippkeite** (VOM RATH), 1881, A., 551.
- Tripropylamine** (ROEMER), 1874, 39.
- propyl-iodide and -hydrate (ROEMER), 1873, 1119.
- Tripropylbiuret** (ROEMER), 1873, 1119.
- Tripropylic chlorosilicate** (CAHOUS), 1873, 871.
- Triisopropylphosphine** and its iodide and hydriodide (v. HOFMANN), 1873, 882.
- Tripropylsilicol** (PAPE), 1882, A., 154.
- Tripyruvintetraureide** (GRIMAU), 1875, 450.
- "**Trisulphonediphenyl nitrio oxide**" (GABRIEL and DEUTSCH), 1880, A., 477.
- Trisulphurin**. See Glyceryltrisulphuric acid.
- Trithionic acid**. See under Sulphur.
- Triticin** (MÜLLER), 1874, 39, 170.
- Triticum sativum**, composition of (CHURCH), 1877, ii., 211.
- Tritochlorite** (FRENZEL), 1882, A., 473.
- Tri-*p*-tolylarsine** (LA COSTE and MICHAELIS), 1879, A., 163; (LA COSTE), 1881, A., 905.
- Tri-*p*-tolylene triamine** (PERKIN), 1879, T., 728; 1880, T., 548.

- Tri-*o*-tolylguanidine** (GIRARD), 1873, 912; (BERGER), 1880, A., 244.  
*α*-dicyano- (BERGER), 1880, A., 244.  
**Tritolylguanidines**, dicyano- (LANDGREBE), 1879, A., 53.  
**Tritolylic phosphate** (WEBER and HEIM), 1882, A., 839.  
**Tritolylmethane** (ROSENSTIEHL and GERBER), 1882, A., 964.  
**Tri-*o*-tolylloxalylguanidine** (BERGER), 1880, A., 244.  
**Tritomite**, composition of (ENGSTRÖM), 1878, A., 115.  
**Triuret** (WEITH), 1878, A., 141.  
**Trögerite** (WINKLER), 1873, 606; (WEISBACH), 1873, 1109.  
**Troilite** (MEUNIER), 1874, 663.  
     its true mineralogical and chemical position (SMITH), 1876, i., 536.  
**Tropæolines** (WITT), 1879, T., 184.  
     use of, in titration (v. MILLER), 1878, A., 527; (LUNGE), 1879, A., 176.  
**Tropeolum majus**, oil of (v. Hofmann), 1874, 792.  
**Tropeines** (LADENBURG), 1880, A., 714; 1881, A., 420, 1157; 1882, A., 984.  
**Tropic acid** (*hyoscinic acid*; *β*-hydroxy-*α*-phenylpropionic acid) (LADENBURG), 1880, A., 674; (SPIEGEL), 1882, A., 520.  
     synthesis of, from acetophenone (LADENBURG and RÜGHEIMER), 1880, A., 472; 1881, A., 171; (SPIEGEL), 1881, A., 277.  
     derivatives of (LADENBURG), 1879, A., 720.  
     chloro- (LADENBURG and RÜGHEIMER), 1880, A., 472.  
**Tropide** (LADENBURG), 1879, A., 720.  
**Tropidine** (1-methyl-2-ethylenetetrahydropyridine) (LADENBURG), 1880, A., 675; 1882, A., 1206.  
     preparation of (LADENBURG), 1879, A., 733.  
     action of bromine on (LADENBURG), 1882, A., 984.  
     platinochloride (LADENBURG), 1880, A., 675.  
**Tropigenine** and its derivatives (MERLING), 1882, A., 739; (PESCI), 1882, A., 1218.  
**Tropilene** (LADENBURG), 1882, A., 216.  
     oxidation of (LADENBURG), 1882, A., 983.  
**Tropilidene** (LADENBURG), 1882, A., 216.  
**Tropine**. See under Alkaloids.  
*ψ*-Tropine. See Oscine.  
**Trypsimetry** (ROBERTS), 1881, A., 1053.  
**Trypsin** in pancreas (PODOLINSKI), 1877, i., 103; (ROBERTS), 1881, A., 1051.
- Tschermakite**. See Albite.  
**Tuberculosis bacillus** (TOUSSAINT), 1882, A., 637, 1120; (KOCH; BAUMGARTEN), 1882, A., 1120.  
**Tubes**, sealed, oven for heating (SMITH), 1880, T., 490; (v. BABO), 1880, A., 846.  
**Tuff-rock** (LIVERSIDGE), 1881, A., 1012.  
**Tungsten**, preparation of, and the composition of wolfram (JEAN), 1876, i., 47.  
     addition of chromium and, to iron and steel (TENISON-WOODS and CLARK), 1874, 1118.  
     chlorides, and oxychlorides (DE LAVAL), 1874, 339; (SCHIEFF), 1879, A., 888.  
     trioxide (*tungstic anhydride*), action of phosphorus pentachloride on (TECLU), 1877, ii., 709.  
     action of, on potassium carbonate (MILLS and WILSON), 1878, T., 361.  
     higher oxides of (FAIRLEY), 1877, i., 141.  
**Tungstic acid**, action of arsenic and phosphoric acids on the sodium salts of (LEFORT), 1882, A., 702.  
     constitution of complex mineral acids derived from (KLEIN), 1882, A., 368.  
     colloidal, and its analogy with paratungstic acid (KLEIN), 1882, A., 469.  
     hydrated (CARNOT), 1875, 45.  
*m-luteo*-Tungstic acid (LEFORT), 1882, A., 702.  
**Tungstates** of the earthy and metallic sesquioxides (LEFORT), 1879, A., 355.  
     new reactions of (MALLET), 1875, 1228.  
     reaction of, in presence of mannitol (KLEIN), 1880, A., 30.  
     new method of analysing (LEFORT), 1881, A., 1107.  
**Tritungstates** (LEFORT), 1879, A., 600.  
**Titanotungstates** (KLEIN), 1881, A., 880.  
**Tungsten minerals** from Meymac (CARNOT), 1875, 45.  
**Tungsten, estimation and separation**—  
     estimation of, in steel, and in their alloys with iron (SCHÖFFEL), 1880, A., 288.  
     separation of, from antimony, arsenic, and iron (COBENZL), 1881, A., 1171.  
**Tungsten bronzes** (PHILIPP and SCHWEBEL), 1880, A., 157; (PHILIPP), 1882, A., 930.

**Tungsten-manganese bronze**(VENABLE), 1880, A., 199.

**Tungstic anhydride.** See Tungsten trioxide.

**Tungstoboric acid**, preparation of (KLEIN), 1882, A., 18.

**Tungstoborates** (KLEIN), 1880, A., 612; 1881, A., 224, 879; 1882, A., 17.

**Tunicata**, mineral constituents of the (HILGER), 1875, 903.

**Tunicin** (FRANCHIMONT), 1880, A., 233.

**Turf**, nitrogen in (v. SIVERS), 1880, A., 344.

**Turgite** (*hydrohamatite*) of Neuenbürg (BAUER), 1879, A., 604.

**Turkey-red dyeing.** See under Dyeing.

**Turkey-red oil.** See under Oils.

**Turnerite** (TRECHMANN), 1877, ii., 117.  
chemical examination of (PISANI), 1877, ii., 715.

**Turnips.** See under Agricultural Chemistry.

**Turpentine**, detection of, in liquid storax (HAGER), 1874, 1017.

See also Resins and Balsams.

**Turpentine oil.** See Oil of turpentine.

**Turquoise.** See Calaité.

**Tyreite** (HEDDLE), 1882, A., 290.

**Tyroleucine** (SCHÜTZENBERGER), 1879, A., 544.

**Tyrolite** (CHURCH), 1873, 108.

**Tyrosine** (*p-hydroxyphenyl- $\alpha$ -amidopropionic acid*) (SCHÜTZENBERGER), 1874, 599; 1878, A., 235.

obtained by the action of baryta on albumin (SCHÜTZENBERGER), 1876, i., 717; 1879, A., 544.

in the young shoots of the gourd (SCHULZE and BARBIERI), 1878, A., 663.

in potatoes (SCHULZE and BARBIERI), 1880, A., 342.

constitution of (OSSIKOWSKY), 1880, A., 473.

synthesis of (ERLENMEYER and LIPP), 1882, A., 1063.

rotatory power of (MAUTHNER), 1882, A., 1206.

action of sodium hydroxide on (OST), 1876, i., 577.

decomposition of, by putrefaction (WEYL), 1879, A., 541.

fusion of, with potash (BAUMANN), 1880, A., 648; 1882, A., 514.

oxidation of (DRECHSEL), 1876, i., 701.

some reactions of (ENGEL), 1876, i., 943.

elimination of nitrogen from (KÖRNER and MENOZZI), 1882, A., 730.

**Tyrosine** (*p-hydroxyphenyl- $\alpha$ -amidopropionic acid*) in the urine in case of phosphorus poisoning. See under Phosphorus poisoning.

**Tyrosines**, isomeric (DEWAR), 1881, A., 1044.

**Tysonite** from Colorado (ALLEN and COMSTOCK), 1881, A., 364.

## U.

**Ulexite** (*borocalcite*; *boronatrocalcite*; *hayesine*) and franklandite, relative composition of (HOW), 1877, ii., 174.

**Ulmic acid.** See Humic acid.

**Ulmic compounds**, synthesis of (MILLOR), 1880, A., 482.

formed from sugar by the action of acids (SESTINI), 1880, A., 538.

**Ulmin** (GUIGNET), 1879, A., 603.

**Ulmus campestris** (*elm*), composition of (CHURCH), 1877, ii., 211.

chemistry of the bark of (JOHANSEN), 1877, i., 720.

**Ultramarine** (UNGER), 1873, 140; 1874, 1062; (SCHEFFER), 1874, 337;

(BÜCHNER), 1875, 44; 1879, A., 597; (PHILIPP), 1876, ii., 383; 1877, i., 686; 1878, A., 175; 1879, A., 108; (LEHMANN), 1877, i., 167;

(STEIN), 1877, i., 686; (KNAPP and EBELL), 1878, A., 834; (HOFFMANN), 1879, A., 108; (ANON.), 1879, A., 506; (RINNE), 1879, A., 885; (KNAPP), 1880, A., 155.

formation of, during the incineration of bread (EDMUND), 1876, i., 880.

manufacture of (FÜRSTENAU), 1876, ii., 223.

development of the (ANON.), 1876, ii., 224.

Solvay's soda used in the preparation of (ILGEN), 1879, A., 987.

synthesis of (PLICQUE), 1878, A., 12.

constitution of (MORGAN), 1873, 475; (RICKMANN), 1879, A., 203, 1014;

(LEHMANN), 1879, A., 204; (ENDEMANN), 1881, A., 509.

absorption-spectra of (WUNDER), 1876, i., 864.

crystals of (GRÜNZWEIG and HOFFMANN), 1876, ii., 382.

action of alkali haloids on (HEUMANN), 1877, ii., 707.

rich in silica, action of hydrochloric acid at high temperatures on (SILBER), 1881, A., 138.

decomposition of, by carbonic acid (SUGUIRA), 1878, A., 834.

compounds (HEUMANN), 1880, A., 217, 367; 1881, A., 351.



**Ultramarine green-** (PHILIPP), 1879, A., 108.

action of silver nitrate on (HEUMANN), 1880, A., 368.

conversion of, into blue (PHILIPP), 1878, A., 175.

lithium-, preparation of (HEUMANN), 1880, A., 367.

potassium- (HEUMANN), 1879, A., 692.

red- (HOFFMANN), 1879, A., 111; (ANON.), 1879, A., 506; (BÜCHNER), 1879, A., 885.

silver- (HEUMANN), 1877, ii., 572; 1878, A., 113; 1879, A., 437; 1880, A., 217; (PHILIPP), 1878, A., 199.

action of alkali halogen salts on (HEUMANN), 1877, ii., 707.

decomposition of (HEUMANN), 1880, A., 367.

violet- (HOFFMANN), 1879, A., 111; (ANON.), 1879, A., 506.

preparation of (ZELTNER), 1878, A., 771; (HOFFMANN), 1879, A., 111; (ANON.), 1879, A., 506.

white- (HOFFMANN), 1879, A., 109.

yellow- (HOFFMANN), 1879, A., 112; (BÜCHNER), 1879, A., 885.

practical and theoretical study of green, blue, and violet (DOLLFUS and GOPPELSROEDER), 1876, ii., 554.

**Ultramarines**, formation of, and their colourations (GUIMET), 1878, A., 198.

composition of (SILBER), 1881, A., 139.

of different metals (DE FORCRAND and BALLIN), 1878, A., 935.

organic (DE FORCRAND), 1879, A., 329, 622.

See also Lapis lazuli.

**Ultramarine furnaces**, temperature and composition of gases evolved from (FISCHER), 1877, i., 111.

**"Ultraquinine"** (WHIFFEN), 1882, A., 317.

**Umbellie acid** (POSEN), 1882, A., 839.

**Umbelliferone** (HIRSCHSOHN), 1878, A., 158; (TIEMANN and REIMER), 1879, A., 720.

derivatives of (TIEMANN and REIMER), 1879, A., 720; (POSEN), 1882, A., 839.

**$\beta$ -Umbelliferone** (*oxycoumarin*) (TIEMANN and LEWY), 1878, A., 424.

**Umbellol** (STILLMAN), 1880, A., 670.

**Undecioic acid** (*hendecioic acid*), conversion of lauric acid into (KRAFFT), 1880, A., 34.

**Undecioic acid** (*hendecioic acid*), conversion of undecylenic acid into (KRAFFT), 1879, A., 306.

**Undecioic acid** (*methyl-di-tert.-butylacetic acid*) (BUTLEROFF), 1880, A., 231.

**Undecioic acid** (*umbellulic acid*) and its ethers (STILLMAN and O'NEILL), 1882, A., 1186.

**Undecolic acid** (KRAFFT), 1878, A., 853.

**Undecylenic acid** (*hendecenoic acid*) (BECKER), 1878, A., 853.

conversion of, into undecioic acid (KRAFFT), 1879, A., 306.

**Unghvarite**. See Chloropal.

**Union**, chemical, induced by pressure (SPRING), 1881, A., 498; 1882, A., 273.

**Unisilicate**, hydrated, approaching pyrosclerite (LEEDS), 1874, 28.

**Units** in absolute electrical measurements (LIPPMANN), 1881, A., 334.

Siemen's, reduction of, to absolute measure (KOHLRAUSCH), 1874, 766.

*Unona odoratissima*, essence of the flowers of (GAL), 1873, 1149.

**Uraconite** (*uranochre*) (HIDDEN), 1881, A., 1110.

**Uralite** (DOELTER), 1878, A., 391.

**Uralite porphyry** of Vaksala, microscopic examination of (SVEDMARK), 1877, ii., 579.

**Uramido-acids** (HUPPERT), 1874, 256.

**p-Uramidobenzoic acid** (*uramidodracylic acid*), derivatives of, and dinitro- (GRIESS), 1873, 178.

**Uramil**. See Amidobarbituric acid.

**Uraninite** (*pitchblende*) (HIDDEN), 1881, A., 1110.

from Branchville, Conn., U.S., chemical composition of (COMSTOCK), 1880, A., 530.

See also Uranoso-uranic oxide under Uranium.

**Uranite**. See Cuprouranite.

**Uranium**, atomic weight of (RAMMELSBURG), 1873, 247; (DONATH), 1879, A., 688; (ZIMMERMANN), 1882, A., 1031.

recovery of, from uranium residues (GAWALOWSKI), 1877, i., 345; (STROHMER), 1878, A., 114.

manufacture, utilisation of bye-products in the (MANN), 1875, 1303.

properties of (ZIMMERMANN), 1882, A., 1031.

**Uranium compounds**, analysis of the light of phosphorescent (BECQUEREL), 1873, 25.

**Uranium salts**, some new (CLARKE and OWENS), 1881, A., 1124.

- Uranium salts.** basic, fluorescent properties of (MORTON), 1874, 642.  
 fluorescent and absorption spectra of (MORTON and BOLTON), 1874, 12.  
 reduction of (ZIMMERMANN), 1882, A., 1269.
- Uranium tetrabromide,** vapour-density of (ZIMMERMANN), 1882, A., 143.  
 oxybromide. See Uranyl bromide.  
 ammonium carbonate, preparation of (BURCKER), 1878, A., 771.  
 tetrachloride, vapour-density of (ZIMMERMANN), 1882, A., 143.  
 pentachloride (ROSCOE), 1874, 933.  
 hexafluoride (DITTE), 1880, A., 853.  
 oxyfluoride. See Uranyl fluoride.  
 nitrate, absorption spectra of (VOGEL), 1879, A., 189.  
 uranous dioxide, action of, on silver nitrate (ISAMBERT), 1875, 1164.  
 uranoso-uranic oxide, specific heat of (DONATH), 1879, A., 688.  
 See also Uraninite.
- trioxide (uranic oxide)*, specific gravity of (BRAUNER and WATTS), 1881, A., 220.  
 precipitation of, by ammonia (ZIMMERMANN), 1880, A., 189.  
 separation of phosphoric acid from (REICHARDT), 1873, 1260.  
 new oxides and compounds of (FAIRLEY), 1876, i., 192; 1877, i., 1, 127.  
 hypophosphite (RAMMELSBERG), 1873, 11.  
 uranates (ZIMMERMANN), 1881, A., 686; 1882, A., 1269.  
 peruranates (FAIRLEY), 1877, i., 134.
- Uranyl salts,** action of, on turmeric paper (ZIMMERMANN), 1881, A., 122.
- Uranyl bromide and its salts** (SENDTNER), 1879, A., 508.  
 fluorides (DITTE), 1880, A., 853.  
 compounds of, with fluorides of the alkali metals (DITTE), 1880, A., 794.  
 ammonium and potassium selenites and selenates (SENDTNER), 1879, A., 507.  
 sulphide, products of decomposition and metamorphosis of (ZIMMERMANN), 1881, A., 79.
- Uranium minerals** (WINKLER), 1873, 606; (WEISBACH), 1873, 1108.  
 from North Carolina (GENTH), 1880, A., 96.  
 mica, arseniferous (*zeunerite*) from Joachimsthal (LAUBE), 1873, 1010.  
 ore of Joachimsthal, vanadium from (PATERA), 1879, A., 989.  
 pitchblende from Joachimsthal (REICHARDT), 1879, A., 18.
- Uranium, detection, estimation and separation:—**  
 test for (KERN), 1876, i., 741.  
 estimation of (FOLLENIUS), 1873, 531; (ZIMMERMANN), 1881, A., 759.  
 separation of, from the alkalis and alkaline earths (SMITH), 1881, A., 4.  
 separation of, from chromium (GIBBS), 1874, 93.  
 separation of, from chromium and iron (DITTE), 1877, ii., 926.  
 separation of, from iron (BURCKER), 1878, A., 771; (ZIMMERMANN), 1880, A., 189.
- Uranium-black and-red** (ZIMMERMANN), 1881, A., 79.
- Uranium bromide dry plates** (CHARBON), 1873, 424.
- Uranochre.** See Uraconite.
- Uranocircite** (WINKLER), 1878, A., 17.
- Uranospharite** (WINKLER), 1873, 606; (WEISBACH), 1873, 1109.
- Uranospinit** (WEISBACH), 1873, 1109.
- Uranothorite** (COLLIER), 1881, A., 1009.
- Uranotile** (WEISBACH), 1873, 1108; 1881, A., 362; (GENTH), 1880, A., 96; (HIDDEN), 1881, A., 1110.
- Urea,** formation of, in the organism (v. KNIERIEM), 1875, 373; (SALKOWSKI), 1875, 775; (SCHMEDEBERG), 1879, A., 952; (DRECHSEL), 1881, A., 192.  
 in the organs (PICARD), 1879, A., 175.  
 in the blood (PICARD), 1877, i., 329, 486.  
 in the liver (HOPPE-SEYLER), 1882, A., 754.  
 formation of, in the liver; an experimental contribution to the question of the examination for urea in the blood and parenchyma (MUNK), 1876, i., 89.  
 form of combination of, in the liver (MUNK), 1877, i., 730.  
 formation of, from ammonia and carbonic anhydride (MINTER), 1882, A., 721.  
 formation of, from ammonium salts of organic acids (FEDER and VOIT), 1881, A., 453.  
 preparation of, from blood by alcoholic dialysis (DRECHSEL), 1879, A., 950.  
 formula of (GRIEBS), 1882, A., 970.  
 fermentation of (RICHER), 1881, A., 1059.  
 action of, on animals (RICHER and MOUTARD-MARTIN), 1882, A., 760.

**Urea**, action of, on asparagine and on aspartic acid (GUARESCHI), 1875, 1256; 1877, i., 457.  
 action of *trichloroacetic chloride* on (MELDOLA and TOMMASI), 1874, 404.  
 action of *trichlorolactic acid* on (ČECH), 1878, A., 552.  
 reaction of, with *furfural* (SCHIFF), 1877, ii., 742.  
 action of hypobromites and hypochlorites on (FOSTER), 1878, T., 470; 1879, T., 122; (FENTON), 1879, T., 12.  
 action of hypochlorites on (FENTON), 1878, T., 300.  
 action of resorcinol on (BIRNBAUM and LURIE), 1881, A., 95.  
 action of sulphonic chlorides on (ELANDER), 1881, A., 164.  
 colour reactions of (ENGEL), 1876, i., 943.  
 transformation of, into cyanamide (FENTON), 1882, T., 262.  
 relation of, to the total nitrogen of the urine in disease (RUSSELL and WEST), 1881, A., 1055.  
 elimination of (OPPENHEIM and MAYER), 1882, A., 238.  
 physiology and pathology of the elimination of (OPPENHEIM), 1882, A., 542.  
 influence of muscular work on the elimination of sugar and, in diabetes (OPPENHEIM), 1882, A., 755.  
 variations in the amount of, excreted under the influence of tea and coffee (ROUX), 1873, 1152; (RABUTEAU), 1873, 1248.  
 double salt of, with cinchonidine, quinidine, and quinine hydrochloride (DRYGIN), 1882, A., 74.  
 dialurate (MULDER), 1874, 48.  
 and potassium phosphate solution, action of bacteria on (HATTON), 1881, T., 256.  
 thio-. See Thiocarbamide.  
**Urea**, detection and estimation:—  
 test paper for (MUSCULUS), 1874, 391; 1876, i., 775.  
 detection of, by oxalic acid (v. BRÜCKE), 1882, A., 901.  
 estimation of, in blood (PICARD), 1877, i., 486; (HAYCRAFT), 1882, A., 667.  
 estimation of, in urine (YVON), 1873, 411; 1877, ii., 223; (SCHULTZEN and NENCKI), 1873, 535; (NOWAK), 1874, 497; (RUSSELL and WEST), 1874, 749; (BUNGE), 1875, 105; (SCHLEICH; APJOHN), 1875,

483; (MAGNIER DE LA SOURCE), 1875, 916; (PLEHN), 1875, 1059; (PEKELHARING), 1876, i., 775; (BLACKLEY), 1876, ii., 466; (DUPRÉ), 1877, i., 534; (SIMPSON and O'KEEFFE), 1877, i., 538; (FENTON), 1878, T., 300; 1879, T., 12; (FOSTER), 1878, T., 470; 1879, T., 122; (REYNOLDS), 1878, A., 448; (HÜFNER), 1879, A., 405; (MÉHU), 1879, A., 985; 1880, A., 681; (ESBACH), 1879, A., 1067; 1881, A., 316; (FAUCONNIER; JAY), 1880, A., 513; (PFLÜGER), 1880, A., 681; 1882, A., 780; (QUINQUAUD), 1881, A., 1085; (DE THIERRY), 1882, A., 246; (DUGGAN), 1882, A., 778; (GRUBER; WORMLEY), 1882, A., 779; (ARNOLD), 1882, A., 1141; (BYASSON), 1882, A., 1330.

**Urea**. See also Carbamide.

**Urea ferment** (MUSCULUS), 1876, i., 952; (MIQUEL), 1878, A., 680; 1879, A., 817; 1880, A., 133.

*Urechites suberecta*, poisonous principle of (BOWREY), 1878, T., 252.

**Urechitin**, preparation of (BOWREY), 1878, T., 255.

**Urechitoxin**. See under Glucosides.

**Ureides**, contribution to the knowledge of (KRAMPS), 1880, A., 631.

estimation of the alkali-metals in the salts of (MENSCHUTKIN), 1874, 890.

**Ureometer** (DE THIERRY), 1882, A., 246.

of Yvon and of Magnier de la Source, modification of (DUPRÉ), 1875, 917.  
 new and convenient form of, for clinical use (BLACKLEY), 1876, ii., 466.

**Urethane**. See Ethylic carbamate.

**Urethanebenzamide and urethanebenzoic acid** (WACHENDORFF), 1878, A., 674.

**Urginea Scilla**. See Squill.

**Uric acid** (CLAUS), 1874, 578.

abnormal presence of, in the saliva, gastric juice, nasal and pharyngeal secretions, the sweat, uterine secretions and in menstrual blood (BOUCHERON), 1881, A., 1161.

preparation of, from guano (REICHARDT), 1876, i., 379.

formula of (FITTIG), 1879, A., 142.

constitution of (GRIMAU), 1877, ii., 741.

action of iodine on (WURTZ), 1874, 368.

- Uric acid**, decomposition of, by alkalis (NENCKI and SIEBER), 1882, A., 378.  
 and sugar, reducing action of (SEEGEN), 1876, ii., 292.  
 colour reactions of (ENGEL), 1876, i., 943.  
 formation of allantoin from, in the organism (SALKOWSKI), 1876, ii., 291.  
 absorbed by the intestinal canal of the dog, behaviour of (SALKOWSKI), 1878, A., 525.  
 conversion of, into urea in the body of a dog (v. VOIT), 1878, A., 444.  
 origin of, in the organism of birds (MEYER and JAFFÉ), 1878, A., 443, 595.  
 excretion of, by birds (CAZENEUVE), 1882, A., 416.  
 derivatives of (MULDER), 1874, 48; (HILL), 1876, ii., 509.  
 estimation of, in urine (MAGNIER DE LA SOURCE), 1875, 916; (FOKKER), 1875, 1293; (PETIT), 1881, A., 944; (LUDWIG), 1882, A., 108; (BYASSON), 1882, A., 1330.  
 estimation of, in diabetic urine (KÜLZ), 1873, 536.  
*iso***Uric acid** (MULDER), 1874, 255.  
 $\psi$ -**Uric acid** (GRIMAUX), 1879, A., 784.  
**Uric acid group**, researches in the (NENCKI), 1873, 282.  
 constitution of the (MEDICUS), 1875, 555.  
 synthetical researches on the (GRIMAUX), 1875, 752; 1876, i., 69; 1877, ii., 740; 1879, A., 375, 460.  
 compounds of (PONOMAREFF), 1879, A., 461.  
**Urinary calculi**, structural composition of (CARTER), 1873, 517.  
 "Urinary mucus," non-existence of (MÉHU), 1877, ii., 633.  
**Urine**, alteration of (PASTEUR), 1876, ii., 542.  
 secretion of acid, from alkaline blood (MALY), 1876, i., 875.  
 substances concerned in the acid reaction of (DONATH), 1874, 812.  
 examination of, for bacteria (MÜLLER), 1877, ii., 632.  
 fermentation of (PASTEUR and JOUBERT), 1876, ii., 543; (BASTIAN), 1877, i., 222; (RÖHMANN), 1882, A., 755.  
 lactic acid fermentation of (CAZENEUVE), 1880, A., 513; 1881, A., 928.  
**Urine**, antiseptic properties of salicylic and benzoic acids on (v. MEYER and KOLBE), 1876, i., 959.  
 behaviour of, to cupric acetate and sulphate, and to a solution of cupric acetate containing free acetic acid (WORM-MÜLLER), 1878, A., 531.  
 some constituents of normal (SCHIA-PARELLI and PERONI), 1880, A., 907.  
 relative quantities of some constituents of (ZUELZER), 1876, i., 726.  
 a new constituent of (BAUMSTARK), 1873, 1242; 1875, 252.  
 lavoratory substance in normal (HAAS), 1877, i., 731.  
 abnormal constituents of, after eating asparagus (HILGER), 1874, 595.  
 after administration of quinine and morphine (BORNTRÄGER), 1881, A., 192.  
 substances in, precipitable by phosphotungstic acid (HOFMEISTER), 1882, A., 755.  
 acetic acid, formic acid, etc. in (THUDICHUM), 1877, ii., 504.  
 acetoacetic acid in (v. JAKSCH), 1882, A., 1120.  
 acetone in (MARKOWNIKOFF), 1877, i., 101.  
 ammonia in, in health and in disease (TIDY and WOODMAN), 1873, 516.  
 elimination of ammonium chloride in (v. VOIT), 1877, ii., 206; (FEDER), 1878, A., 237, 993; (SALKOWSKI), 1879, A., 830.  
 alcohol (physiological) in human (BÉCHAMP), 1873, 399.  
 bile-acids in normal (VOGEL; DRAGENDORFF), 1873, 928.  
 appearance of biliary salts in, caused by certain forms of poisoning (FELTZ and RITTER), 1876, i., 410.  
 bile-pigment in (HOPPE-SEYLER), 1875, 902.  
 dextrin in (REICHARDT), 1876, i., 410.  
 glycerolphosphoric acid in normal human (ŠOTNISCHEWSKY), 1881, A., 631.  
 is grape-sugar a normal constituent of? (KÜLZ), 1876, ii., 647.  
 indoxylsulphuric acid in (v. BAAYER), 1880, A., 46.  
 origin of indoxylsulphuric acid in (JAFFÉ), 1873, 516.  
 elimination of indoxylsulphuric acid in, under physiological and pathological conditions (JAFFÉ), 1878, A., 442.



**Urine**, lactic acid in, in disease (NENCKI and SIEBER), 1882, A., 1309.  
 lactose in (HOFMEISTER), 1878, A., 442.  
 ammonium magnesium phosphate in a sample of old (SCHWANERT), 1882, A., 637.  
 occurrence and origin of methylamine and methylcarbamide in (SCHIFFER), 1881, A., 631.  
 relation of nitrogen in, to phosphoric acid (ZUELZER), 1877, ii., 205.  
 relation of the total nitrogen to the urea in, in disease (RUSSELL and WEST), 1881, A., 1055.  
 oxalic acid in (FÜRBRINGER), 1878, A., 162.  
 recognition of phenol-forming substance in (MUNK), 1876, ii., 212; (SALKOWSKI), 1877, i., 330.  
 necessity of examining the, in cases of phosphorus-poisoning (SELM), 1875, 1059.  
 phosphorus-bases in, in acute phosphorus-poisoning (SELM), 1882, A., 325.  
 pigments, pathological (BAUMSTARK), 1875, 279, 480.  
   human, with an account of their artificial production from bilirubin and from hæmatin (MAC MUNN), 1881, A., 1056.  
   formation of, from blood (HOPPE-SEYLER), 1875, 96.  
   of the indigo-group (NENCKI), 1875, 479.  
 pyrocatechol in (BAUMANN), 1876, ii., 109.  
 influence of muscular work on the elimination of sugar and urea in, in diabetes (OPPENHEIM), 1882, A., 755.  
 incompletely oxidised sulphur in (LÉPINE and FLAVARD), 1881, A., 298; (LÉPINE), 1882, A., 560.  
 conjugated sulphuric acids in the (BAUMANN), 1876, i., 726; ii., 212, 534.  
 influence of sulphur on the excretion of sulphuric acid in the (REGENSBURGER), 1877, ii., 911.  
 thiocyanates in (GSCHIEDLEN), 1877, ii., 205; (MUNK), 1877, ii., 347; (THUDICHUM), 1877, ii., 505.  
 urobilin in (ESOFF), 1876, ii., 108.  
 diabetic (DECHMÜLLER), 1881, A., 1162.  
   which reduced Fehling's solution, but did not affect polarised light (DAVID), 1875, 1207.  
 estimation of uric acid in (KÜLZ), 1873, 536.

**Urine of animals.** See Animals under Agricultural Chemistry.  
 of new-born children (MARTIN, RUGE, and BIEDERMANN), 1876, i., 410.  
**Urine, analytical methods relating to:—**  
 detection of albumin in (HILGER), 1876, i., 445; (RAABE), 1882, A., 342.  
 detection of biliary acids and bile-pigments in (HILGER), 1876, i., 445.  
 detection of ethylic acetoacetate in (HILGER), 1879, A., 560.  
 detection of indoxylsulphuric acid in (WEBER), 1879, A., 343.  
 detection of iodine in (FIELD), 1881, A., 644.  
 detection of mercury in (MAYENÇON and BERGERET), 1874, 602; (FÜRBRINGER), 1878, A., 1010; (LUDWIG), 1882, A., 99.  
 detection of phenol in (ENGEL), 1881, A., 115.  
 testing of, for phenol by the pine-wood reaction (T. and D. TOMMASI), 1882, A., 245.  
 detection of salicylic acid in (ROBINET), 1878, A., 247; (CAZENEUVE), 1879, A., 488; (PAGLIANI), 1879, A., 748; (BORNTRÄGER), 1881, A., 472.  
 estimation of albumin in (BORNHARDT), 1877, ii., 368.  
 estimation of chlorine in (FALCK), 1875, 1058; (SALKOWSKI), 1879, A., 830; 1881, A., 643; (HABEL and FERNHOLZ), 1882, A., 551; (HABEL), 1882, A., 552.  
 estimation of glucose in (STROHL), 1876, i., 111; (CARNELUTTI and VALENTE), 1881, A., 315.  
 estimation of iodine in (HILGER), 1874, 717.  
 estimation of magnesium in, by titration (KRAUS), 1882, A., 775.  
 estimation of nitrogen in (WASHBURN), 1876, ii., 668; (v. SCHRÖDER), 1879, A., 829.  
 estimation of nitrogen in, apparatus for (FLAVARD), 1881, A., 192.  
 estimation of the nitrogenous constituents of (BYASSON), 1882, A., 1330.  
 estimation of oxygen in (FREIRE), 1876, i., 115.  
 estimation of phenol in (CLOËTTA and SCHÄR), 1882, A., 106.  
 estimation of potassium chlorate in (HEHNER), 1878, A., 683.  
 estimation of salicylic acid in (CAZENEUVE), 1879, A., 488; (PELLET), 1882, A., 1003.

## Urine, analytical methods relating to:—

estimation of sugars in (WORM-MÜLLER and HAGEN), 1878, A., 531.

estimation of sulphuric acid in (BAUMANN), 1878, A., 682.

estimation of urea in. See Urea.

estimation of uric acid in. See Uric acid.

Urn resin (HOSTMANN; FLÜCKIGER), 1876, i., 614.

Urobilin. See Hydrobilirubin.

Urobtylchloralic acid (KÜLZ), 1882, A., 76.

Urocaninic acid and urocanine (JAFFÉ), 1875, 1187.

Urochloralic acid (MUSCULI'S and v. MERING), 1875, 657, 1040; (KÜLZ), 1882, A., 76, 1116; (v. MERING), 1882, A., 952.

Urohæmatin and urolutein (MACMUNN), 1881, A., 1056.

Uronitrotoluic acid (JAFFÉ), 1879, A., 176; (BAUMANN and PREUSSE), 1879, A., 815.

Uroxanic acid (MULDER), 1876, i., 568.

decomposition of (MEDICUS), 1877, i., 69.

Urusite (FRENZEL), 1880, A., 616.

Urvölgyte. See Herrengrundite.

Usneol and usnetol (PATERNÒ), 1882, A., 1082.

Usnic acid (*carbusnic acid*) (PATERNÒ), 1876, i., 202; 1877, i., 89; 1878, A., 882; 1882, A., 1079; (SALKOWSKI), 1876, i., 599; (HESSE), 1877, ii., 896.

preparation of, and its reactions (STENHOUSE and GROVES), 1881, T., 234.

$\beta$ -Usnic acid (*cladonic acid*) (PATERNÒ), 1882, A., 1080.

Usnic anilide (PATERNÒ), 1882, A., 1082.

Usnolic acid (STENHOUSE and GROVES), 1881, T., 235; (PATERNÒ), 1882, A., 1080.

*Ustilago maydis*. See Corn ergot.

Uterine secretions, abnormal presence of uric acid in (BOUCHERON), 1881, A., 1161.

Uvic acid. See Pyrottritic acid.

Uvitic acid (BÖTTINGER), 1874, 1160; (WROBLEWSKI), 1878, A., 978.

derivatives of (BÖTTINGER), 1876, ii., 414; 1877, ii., 896.

Uvitonic acid. See 2-Methylpyridine-4:6-dicarboxylic acid.

## V.

Vacuum. Torricellian (MOSER), 1877, ii., 163.

Valency (JANOVSKY), 1876, ii., 270.  
so-called differences in, of a multi-valent atom (LOSSEN), 1881, A., 679.

Valentinite (FRENZEL), 1878, A., 708.  
See also Antimony oxide.

*iso*Valeraldehyde (*valeral*), action of acetic chloride on (SIMPSON), 1880, A., 459.

action of ammonia on (LEUBAVIN), 1873, 626; 1874, 355.

action of ammonium thiocarbamate on (MULDER), 1874, 47.

action of sodium and of caustic potash on (BORODIN), 1873, 58; 1874, 145.  
thio- (BARBAGLIA), 1881, A., 34.

*iso*Valeraldehyde-ammonia, compound of, with silver nitrate (*amylidenamine silver nitrate*) (MIXTER), 1878, A., 564.

*iso*Valeramide, 2-amido-, and its hydrochloride (LIPP), 1881, A., 85.

Valeranilide (*isobutylformanilide*) and valeramide (SCHMIDT and SACHTLEBEN), 1879, A., 139.

Valerian, oil of (BRUYLANTS), 1878, A., 512, 799.

Valeric acid, chloranhydride of, heat of decomposition of (LUGNIN), 1874, 356.

diamido-. See Ornithuric acid.

iodo- (*hydiiodoangelic acid*) (SCHMIDT), 1879, A., 618.

action of zinc and sulphuric acid on (SCHMIDT), 1881, A., 1126.

*n*-Valeric acid and its salts (KEHRER and TOLLENS), 1881, A., 411; (FITZ), 1881, A., 798.

from *n*-hexoic acid (ERLENMEYER), 1877, i., 590.

conversion of levulinic acid into (KEHRER and TOLLENS), 1881, A., 411.

$\alpha$ -amido-, and its salts (JUSLIN), 1882, A., 599; (LIPP), 1882, A., 709.

$\gamma$ -mono- and  $\gamma\delta$ -di-bromo- (FITTIG and MESSERSCHMIDT), 1882, A., 35.

*iso*Valeric acid (*isopropylacetic acid*), preparation of (FICINUS), 1874, 299.

conversion of hydroxyvaleric acid into (SCHIROKOFF), 1881, A., 414.

preparation of, on the large scale (PIERRE and PUCHOT), 1873, 874.

purification of (LESCŒUR), 1877, i., 589.

density, boiling-point and rotatory power of (PIERRE and PUCHOT), 1873, 55, 1017.

*iso*Valeric acid (*isopropylacetic acid*), action of nitric acid on (BREIT), 1882, A., 162.

ethers of, density, boiling-point and rotatory power of (PIERRE and PUCHOT), 1873, 55, 1017.

$\alpha$ -amido- (LIPP), 1881, A., 85.

$\beta$ -amido- (HEINTZ), 1880, A., 101.

$\beta$ -iodo- (SCHIROKOFF), 1881, A., 414.

Valeric acid (*isobutylformic acid*), and its salts, and amido- and bromo- (SCHMIDT and SACHTLEBEN), 1879, A., 139.

and tiglic acid, calcium double salt of (SCHMIDT), 1881, A., 1126.

Valeric acid (*methylethylacetic acid*; *hydrotiglic acid*) (SAUR), 1878, A., 27; (SCHMIDT), 1879, A., 618; (CONRAD and BISCHOFF), 1880, A., 628.

3-bromo-, and its salts (FITTIG and PAGENSTECHER), 1879, A., 455; (FITTIG), 1879, A., 456; (SCHMIDT), 1879, A., 618.

2:3-dibromo-, and its salts (FITTIG and PAGENSTECHER), 1879, A., 455; (FITTIG), 1879, A., 456.

action of alkalis on (HELL and SCHOOP), 1879, A., 521.

3-iodo- (*hydriodomethylcrotonic acid*) (SCHMIDT), 1879, A., 618.

action of zinc and sulphuric acid on (SCHMIDT), 1881, A., 1126.

Valeric acid (*trimethylacetic acid*; *dimethylpropionic acid*; *piralic acid*) (BUTLEROFF), 1873, 48, 1020; 1874, 247, 1083; 1875, 248; (FRIEDEL and DA SILVA), 1873, 1126; (PAWLOFF), 1878, A., 966.

Valeritrin (LJUBAVIN), 1873, 1023.

Valeroisobutylcarbamide (v. HOFMANN), 1882, A., 1053.

*iso*Valerocyanamide (MERTENS), 1878, A., 397.

Valerolactide ( $\alpha$ -hydroxyisovaleric anhydride) (SCHMIDT and SACHTLEBEN), 1879, A., 140.

Valerolactone ( $\gamma$ -hydroxyvaleric anhydride) (FITTIG), 1880, A., 799; (FITTIG and MESSERSCHMIDT; FITTIG and WOLFF), 1882, A., 35; (HJELT), 1882, A., 948.

bromo- (FITTIG and MESSERSCHMIDT), 1882, A., 35.

Valeronitrile (OECHSNER DE CONINCK), 1881, A., 239.

*iso*Valeronitrile,  $\alpha$ -amido-, and its hydrochloride (LIPP), 1880, A., 621; 1881, A., 84.

imido-, and its hydrochloride (LIPP), 1881, A., 85.

*iso*Valero-*p*-toluidide, 3-nitro-, action of hydrogen on (FRIEDERICI), 1879, A., 311.

Valerylene. See Pentinene.

Valerylenetrimethylammonium bromide, and its derivatives (LADENBURG), 1882, A., 534.

Valonia and certain other sources of tannin (JAHN), 1879, A., 248.

Valve for gases and corrosive liquids (RIDOUT), 1874, 538.

Vanadic acid and vanadates. See under Vanadium.

Vanadinite (FRENZEL), 1876, i., 49; 1882, A., 472; (NORDSTRÖM), 1880, A., 15; (SILLIMAN), 1881, A., 1108.

composition of (NORDSTRÖM), 1881, A., 532; (RAMMELBERG), 1881, A., 1001.

from Cordoba, crystalline form of (WEBSKY), 1881, A., 1002.

red, from the lead-works on the Obir, near Kappel (v. ZEPHAROVICH), 1877, i., 583.

Vanadium (GUYARD), 1876, ii., 173.

presence of, in all the primitive rocks (DIEULAFAIT), 1882, A., 371.

in the basalts of Clermont-Ferrand (Auvergne) (ROUSSEL), 1874, 137.

wide distribution of, and its association with phosphorus in many rocks (HAYES), 1875, 868.

in native silicoaluminate of manganese from Belgium (PISANI), 1873, 355.

from the uranium ore of Joachimsthal (PATERA), 1879, A., 989.

occurrence of, in commercial caustic soda (DONATH), 1881, A., 856.

specific volume of (THORPE), 1880, T., 388.

use of, for the titration of potassium permanganate (GERLAND), 1878, A., 244.

Vanadium compounds (GERLAND), 1876, ii., 483.

preparation of, from the basic slag of Creusot (WITZ and OSMOND), 1882, A., 1246.

Vanadium fluorine-compounds (BAKER), 1878, T., 388.

Vanadium salts, use of, in the preparation of aniline-black (GUYARD), 1876, i., 814; (WITZ), 1876, ii., 678; 1877, ii., 950; (GOUILLON), 1878, A., 454.

Vanadium trichloride, preparation of (HALBERSTADT), 1882, A., 1268.

hypovanadic chloride (CROW), 1876, ii., 457.

**Vanadium:—**

- vanadyl trichloride, physical properties of (THORPE, 1880, T., 349.  
 compound of, with ethyl ether (BEDSON), 1876, i., 309.  
 hypovanadic hydroxide (CROW), 1876, ii., 454.  
*tetroxide (hypovanadic oxide)* and its compounds (CROW), 1876, ii., 453.  
**Vanadic acid**, dialysis of a sulphuric acid solution of (GERLAND), 1878, A., 375.  
 separation of, from alkalis (GERLAND), 1877, ii., 922.  
 separation of, from the oxides of aluminium and iron (BETTENDORF), 1877, ii., 175, 922.  
**Vanadates**, natural, composition of (RAMMELSBERG), 1881, A., 1000.  
 a new property of (HAUTEFEUILLE), 1880, A., 527.  
 chloro- (HAUTEFEUILLE), 1874, 131.  
**Metavanadic acid** (GERLAND), 1873, 605; 1876, ii., 483.  
**Vanadium sulphate** and double sulphate (alkaline), analysis of (GERLAND), 1878, A., 244.  
 sulphates (CROW), 1876, ii., 455; (GERLAND), 1878, A., 271, 376.  
 sulphides (KAY), 1880, T., 728.  
**Vanadium minerals**, two new (ROSCOE), 1877, i., 444.  
 some American (GENTH), 1877, i., 175.  
 from Cordoba State, Argentine Republic (RAMMELSBERG), 1881, A., 1000; 1882, A., 150.  
**Vanadium, detection, estimation and separation:—**  
 detection of, in a meteoric stone (ARJOHN), 1874, 104.  
 and thallium, estimation and separation of (CARNELLEY), 1873, 324.  
**Vanadium-bronze** (GERLAND), 1873, 605.  
**Vandyke-red** (*diplumbic chromate*) (WELBORN), 1874, 1100.  
**Vanilla**, estimation of vanillin in (TIEMANN and HAARMANN), 1876, i., 112.  
**Vanillic acid** (TIEMANN), 1875, 1198; (MATSMOTO), 1878, A., 500.  
 formation of, from eugenol (TIEMANN), 1876, i., 711.  
 solubility of, in water (MATSMOTO), 1878, A., 501.  
 bromo- (MATSMOTO), 1878, A., 502.  
 nitro- (TIEMANN and MATSMOTO), 1876, ii., 524.  
 5-nitro- (WESELSKY and BENEDIKT), 1882, A., 1201.

- iso***Vanillic acid** (TIEMANN and WILL), 1881, A., 740.  
 preparation of, and solubility of, in water, and 6-nitro- (MATSMOTO), 1878, A., 500.  
**Vanillin** (WASSERMANN), 1876, i., 708; (TIEMANN and KOPPE), 1882, A., 55; (JACKSON and MENKE), 1882, A., 1109; (SINGER), 1882, A., 1124.  
 in Siam benzoin (JANNASCH and RUMP), 1879, A., 245.  
 in raw sugars (SCHEIBLER), 1880, A., 467; (V. LIPPMANN), 1880, A., 646; (ANON.), 1880, A., 864.  
 formation of, from coniferin (TIEMANN and HAARMANN), 1874, 895.  
 formation of, from eugenol (TIEMANN), 1876, i., 711; (ERLENMEYER), 1876, ii., 198.  
 mode of synthesis of (TIEMANN), 1876, i., 75.  
 action of nascent hydrogen on (TIEMANN), 1876, i., 75.  
 action of potassium permanganate on (LEUKEN), 1882, A., 1329.  
 and coniferyl derivatives (TIEMANN), 1876, ii., 85.  
 constitution of (TIEMANN and MENDELSON), 1877, i., 87.  
 bromo- and iodo- (TIEMANN and HAARMANN), 1874, 896.  
 estimation of, in vanilla (TIEMANN and HAARMANN), 1876, i., 112.  
**Vanillodiacetonamine** and its salts (HEINTZ), 1879, A., 144.  
**Vanillyl alcohol** (TIEMANN), 1876, i., 75.  
**Vaporisation** without fusion, lecture experiment to illustrate (MEYER), 1876, i., 516.  
**Vapour density**, theory of (MOUTIER), 1875, 1154.  
 determinations (CROUILLEBOIS), 1874, 648; (DUMAS), 1874, 650; (V. MEYER), 1877, i., 34; 1878, A., 263; 1879, A., 177; 1880, A., 433; (BRÜHL), 1877, i., 165; (GOLDSCHMIEDT and CIAMICIAN), 1877, ii., 404; (KNECHT), 1877, ii., 569; 1878, A., 264; 1880, A., 679; (V. HOFMANN), 1877, ii., 570; 1879, A., 196; (HABERMANN), 1877, ii., 697; (GUARESCHI), 1878, A., 194; (TROOST), 1878, A., 365, 832; (L. MEYER), 1880, A., 824; (PETTERSSON and EKSTRAND), 1880, A., 841.  
 acoustic method of (GOLDSCHMIDT), 1881, A., 12.



- Vapour density** determinations in the barometric vacuum (V. HOFMANN), 1877, i., 33; 1879, A., 196; (BRÜHL), 1879, A., 499; (BELL and TEED), 1880, T., 576.
- at high temperatures which attack mercury (V. and C. MEYER), 1879, A., 294; (PFAUNDLER), 1879, A., 499.
- at the boiling point of selenium (TROOST), 1882, A., 1159.
- errors resulting from the application of the law of mixture of vapours in (TROOST and HAUTEFEUILLE), 1877, i., 431.
- apparatus (ENGLER), 1877, i., 269; (MUIR and SUGIURA), 1877, ii., 140; (THORPE), 1880, T., 148; (SMITH), 1880, T., 491; (CRAFTS), 1880, A., 431; (PICCARD), 1880, A., 743.
- of ammonium sulphide (SALET), 1878, A., 645.
- of ammonium dihydrosulphide (SAINTE-CLAIRE DEVILLE), 1879, A., 880.
- of ammonium sulphides (HORSTMANN), 1877, ii., 840.
- of antimonous oxide (V. and C. MEYER), 1879, A., 875.
- of arsenic pentoxide (V. and C. MEYER), 1879, A., 767, 875.
- of bromine (CRAFTS; MEYER and ZÜBLIN), 1880, A., 432; (JAHN), 1882, A., 794.
- of cadmium bromide (V. and C. MEYER), 1879, A., 875.
- of chlorine (BRODIE), 1879, T., 676; (LIEBEN), 1879, A., 1011; (CRAFTS), 1880, A., 431; (MEYER and ZÜBLIN), 1880, A., 432; (MEYER), 1881, A., 219.
- of chlorine peroxide (V. PEBAL and SCHACHERL), 1882, A., 1161.
- of cinnabar (V. and C. MEYER), 1879, A., 767.
- of copper chlorides (V. and C. MEYER), 1879, A., 767, 875.
- of ferric chloride (V. and C. MEYER), 1879, A., 1014.
- of the halogens (MEYER), 1881, A., 872.
- of hydrobromic and hydrochloric acids (CALM), 1879, A., 579.
- of indium chloride (V. and C. MEYER), 1879, A., 579.
- of indole (NENCKI), 1876, i., 600.
- of iodine (CRAFTS), 1880, A., 432, 788; (MEYER), 1880, A., 433, 696, 788; (CRAFTS and MEYER), 1880, A., 433, 606; 1881, A., 221; (TROOST), 1880, A., 695; (BERTHELOT), 1880, A., 846.
- Vapour density of mercuric sulphide** (V. and C. MEYER), 1879, A., 767.
- of nitrogen dioxide (BRODIE), 1879, T., 677.
- of nitrogen peroxide (TROOST), 1878, A., 365; (BRODIE), 1879, T., 677; (NAUMANN), 1879, A., 195.
- of phosphorus pentachloride (WURTZ), 1873, 726; (V. and C. MEYER), 1879, A., 579.
- of potassium (MEYER), 1880, A., 434.
- of selenium and tellurium (SAINTE-CLAIRE DEVILLE and TROOST), 1880, A., 847.
- of sodium (MEYER), 1880, A., 434.
- of stannous chloride (V. and C. MEYER), 1879, A., 1014; (CARNELLEY), 1880, A., 219.
- of sulphur (V. and C. MEYER), 1879, A., 769.
- of uranium tetra-bromide and -chloride (ZIMMERMANN), 1882, A., 143.
- of zinc chloride (V. and C. MEYER), 1879, A., 1014.
- of acetic acid (TROOST), 1878, A., 365, 832; (PETTERSSON and EKSTRAND), 1880, A., 868.
- influence of water on (PETTERSSON), 1882, A., 3.
- of alizarin (TROOST), 1879, A., 1039.
- of isoamylic benzoate (TROOST), 1879, A., 1025.
- of polyisobutaldehyde (URECH), 1880, A., 620.
- of  $\beta$ -dinaphthyl (KNECHT), 1880, A., 679.
- of the three isomeric dinaphthyls (SMITH), 1879, T., 226; A., 537.
- of dinaphthyl ketones (KNECHT), 1880, A., 679.
- of 2:5-diphenylpyrazine (*isoindole*) (STAEDEL and KLEINSCHMIDT), 1880, A., 660.
- of homologous ethers (SCHUMANN), 1881, A., 782.
- of ethylic benzoate (TROOST), 1879, A., 1025.
- of formic acid (CALM), 1879, A., 569; (PETTERSSON and EKSTRAND), 1880, A., 868.
- influence of water on (PETTERSSON), 1882, A., 3.
- of a few hydroxylamine derivatives (GURKE), 1881, A., 571.
- of indigotin (V. SOMMARUGA), 1879, A., 63.
- of phthalic anhydride (TROOST), 1879, A., 1025.

**Vapour density** of piperonal (KNECHT), 1877, ii., 894.  
 of potassium (DEWAR and DITTMAR), 1873, 726.  
 of pyrene (SMITH and DAVIS), 1880, T., 415.  
 of resorcinol (TROOST), 1879, A., 1025.  
 of suberone (DALE and SCHORLEMMER), 1879, T., 686.  
 of tetraphenylethane and triphenylbenzene (KNECHT), 1880, A., 679.  
 See also Density and Specific Gravity.  
**Vapour pressure**, latent heat, and molecular weight, relation between (PICTET), 1876, ii., 38; 1877, i., 162.  
 of homologous series and Kopp's law of constant difference of boiling-points (WINKELMANN), 1877, ii., 822; 1881, A., 71.  
 of aromatic compounds (NAUMANN), 1878, A., 263.  
 of mixed liquids (DUCLAUX), 1878, A., 549; (KONOWALOFF), 1881, A., 1093; 1882, A., 136.  
 of saline solutions (RAOULT), 1879, A., 4; (PAUCHON), 1880, A., 211.  
 of various substances, comparison of the curves of (DE MONDÉSIR), 1880, A., 435, 605.  
 of ammonium carbamate (ISAMBERT), 1882, A., 269.  
 of the halogen derivatives of ethane (STAEDEL), 1880, A., 618.  
 See also Weight, molecular.  
**Vapour tension**. See Vapour pressure.  
**Vapours under the microscope** (BODASZEWSKY), 1881, A., 505.  
 emitted at a given temperature by the same body in two different states (MOUTIER), 1873, 838.  
 molecular constitution of (NAUMANN), 1878, A., 467.  
 evidence of variation in the molecular structure of (LOCKYER), 1876, ii., 34.  
 spectra of, at high temperatures (LOCKYER), 1874, 1124; 1876, i., 181.  
 coloured, spectral analysis of (STEIN), 1875, 412.  
 influence of temperature and pressure on the spectra of (CIAMICIAN), 1879, A., 685.  
 magnetic rotatory power of (BICHAT), 1879, A., 577.  
 refraction of gases and (MASCART), 1878, A., 359, 693.  
 critical point of mixed (DEWAR), 1880, A., 842; 1882, A., 238.

**Vapours**, internal condition and latent heat of (PUSCHL), 1878, A., 194.  
 specific heat of (FLAWITZKY), 1881, A., 340.  
 and its variations with the temperature (WIEDEMANN), 1878, A., 193.  
 from saline solutions, temperature of (MÜLLER), 1877, i., 430.  
 expansion of overheated (HIERWIG), 1873, 242.  
 and gases condensed by charcoal, action of heat on (MELSENS), 1874, 120.  
 held in suspension by gases, condensation of (PELOUZE and AUDOIN), 1873, 1194.  
 cooling power of (WITZ), 1881, A., 341.  
 laws of the compressibility of, and the coefficients of dilatation of certain (TROOST and HAUTEFEUILLE), 1877, i., 32.  
 transpiration of (MEYER), 1878, A., 368; (MEYER and SCHUMANN), 1881, A., 504.  
 diffusion of, through porous cells (PULJ), 1877, ii., 835.  
 of chlorinated organic compounds, properties of (BERTHELOT), 1881, A., 470.  
 dissociated, new method of recognizing (TROOST), 1877, ii., 273.  
 metallic, reversal of the lines of (LIVEING and DEWAR), 1881, A., 957; 1882, A., 254.  
 saturated, behaviour of (PUSCHL), 1875, 997.  
 relations between the pressures, temperatures, and densities of (WINKELMANN), 1880, A., 692.  
**Varec**. See Kelp.  
**Variolite** from Durance, structure and mineralogical composition of (MICHEL-LÉVY), 1877, ii., 412.  
**Variscite** (HELMHACKER), 1881, A., 541.  
 of Breithaupt and callinite of Damour, identity of the so-called peganite of Arkansas with the (CHESTER), 1877, ii., 852.  
 note on the crystallisation of (CHESTER), 1878, A., 651.  
**Varnish**, improvements in the manufacture of (ZINGLER), 1877, ii., 244.  
 made from ebonite-cuttings (ANON.), 1873, 308.  
 and oil-colours, quick-drying (ANON.), 1874, 728.  
 aqueous, for prints on unglazed paper (EDER), 1881, A., 212.

- Varnish**, dull (ANON.), 1873, 1272.  
 leather, preparation of (HENNIC), 1878, A., 827.  
 Japan (ANON.), 1874, 400.  
 Parisian wood (GRÄGER), 1873, 307.
- Vasculose** (FREMY), 1877, i. 229;  
 (FREMY and URBAIN), 1882, A., 708.  
 certain properties of (FREMY and URBAIN), 1882, A., 420.
- Vaseline** (WERNER), 1880, A., 930.  
 German (ANON.), 1882, A., 786.
- Vasite**, composition of (ENGSTRÖM), 1878, A., 115.
- Vateria indica* (Pincy tallow), fatty matter of (DAL SIE), 1878, A., 764.
- Vauquelinite** (SILLIMAN), 1881, A., 1109.
- "Vedovine,"** a tannin extract (VEDOVA), 1879, A., 496.
- Vegetable fats.** See Fats.  
 fibres. See Fibre.  
 oils. See Oils, vegetable.  
 substances, inflammability of, with nitric acid (HAAS), 1881, A., 771.
- Vegetables and vegetation** See under Agricultural Chemistry.  
 preserved, composition of (ATFIELD), 1877, ii., 952.
- Veletta limbosa*, colouring matter of (A. and G. DE NEGRI), 1877, ii. 791.
- Venasquite** (DAMOUR), 1881, A., 379.
- Venerite** (HUNT), 1878, A., 480.
- Veratralbine** (WRIGHT and LUFF), 1879, T., 415; (WRIGHT), 1879, T., 422.
- "Veratramarin"** from white hellebore root (WEPPEN), 1873, 905.
- "Veratria,"** or **"veratroidia"** (WRIGHT), 1879, T., 421.  
 action of alcoholic soda on (WRIGHT and LUFF), 1878, T., 338.
- Veratric acid** (TIEMANN and MENDELSON), 1876, i., 75; (TIEMANN and MATSMOTO), 1876, ii., 524; (WRIGHT and LUFF), 1878, T., 152, 339, 353; (TIEMANN and WILL), 1881, A., 740.  
 constitution of (KÖRNER), 1877, i., 88.  
 solubility of, in water (MATSMOTO), 1878, A., 501.  
 amido- and nitro- (TIEMANN and MATSMOTO), 1876, ii., 524.  
 bromo- (MATSMOTO), 1878, A., 502.
- Veratrine and veratroidine.** See under Alkaloids.
- Veratrol** (1:2-dimethoxybenzene; dimethylpyrocatechol; methylguaiacol) (TIEMANN and KOPPE), 1882, A., 54.
- Veratrol** (1:2-dimethoxybenzene; dimethylpyrocatechol; methylguaiacol) from dimethylprotocatechuic acid (WRIGHT and LUFF), 1878, T., 162.  
 dibromo- (MATSMOTO), 1878; A., 502.  
 mono- and tri-nitro- (TIEMANN and MATSMOTO), 1876, ii., 524.
- Veratroylcarboxylic acid** (dimethoxybenzoylcarboxylic acid), and its relation to  $\alpha$ -homoveratric acid (TIEMANN and MATSMOTO), 1878, A., 503.
- Veratrum album*, alkaloids of (MITCHELL), 1875, 1268; (WRIGHT and LUFF), 1879, T., 405.  
 resin of (MITCHELL), 1875, 1268.
- Veratrum Lobelianum*, alkaloids of (TOBIEN), 1878, A., 589.
- Veratrum Sabadilla*, alkaloids of (MITCHELL), 1875, 1268; (WRIGHT and LUFF), 1878, T., 338; (HESSE), 1878, A., 802.
- Veratrum viride*, composition of the ash of the root of (MITCHELL), 1875, 1268.  
 alkaloids of (MITCHELL), 1875, 1267; (WRIGHT), 1879, T., 421; (BULLOCK), 1880, A., 170.  
 does, contain an alkaloid other than jervine? (BULLOCK), 1876, ii., 530.  
 resin of (MITCHELL), 1875, 1267.  
 saponification of resin from (BULLOCK), 1880, A., 171.
- Veridine** (MITCHELL), 1875, 1267.
- Verine** (WRIGHT and LUFF), 1878, T., 354.
- Vermiculites**, crystallographic and chemical relations of, to the micas (COOKE), 1875, 134.
- Vermilion**, deterioration of the colour of, by contact with brass and copper (HEUMANN), 1875, 673.  
 See also Mercuric sulphide under Mercury.
- Vesbine** (SCACCHI), 1880, A., 445.
- Vesbium** (SCACCHI), 1880, A., 445; 1882, A., 470; (RAMMELSBERG), 1880, A., 611.
- Vesuvian and vesuvianite.** See Idocrase.
- Vesuvius**, composition of ashes from (OSTERLAND and WAGNER), 1873, 1011.  
 ash ejected from, February 25th, 1882 (RICCIARDI), 1882, A., 932.  
 lava of 1631, yellow incrustation from (SCACCHI), 1880, A., 445; 1882, A., 470.  
 lavas, composition of (FOURQUÉ), 1875, 241; (ROTH), 1882, A., 482; (RICCIARDI), 1882, A., 1177.

- Vesuvius**, mass ejected from, in the eruption of 1872 (SCACCHI), 1875, 1244.  
 pumices collected on Monte Sant' Angelo, chemical composition of (RICCARDI), 1882, A., 814.  
 new sublimates from the crater of (SCACCHI), 1882, A., 370.
- Veselyite** (SCHRAUF), 1875, 546; 1881, A., 369.
- Vetch**. See under Agricultural Chemistry.
- Vibrations**, produced in the particles of bodies by the vibrations of the ether (SELLMEIER), 1873, 242.
- Viburnin** (VAN ALLEN), 1881, A., 104.
- Viburnum prunifolium* (VAN ALLEN), 1881, A., 104.
- Vicia villosa*, cultivation of (ECKERT), 1882, A., 647.
- Vicine** (RITTHAUSEN), 1876, i., 936; 1881, A., 1158.
- "**Vinasse**" from beetroot molasses, products of the dry distillation of (VINCENT), 1877, ii., 240, 379; 1879, A., 612, 913; 1880, A., 233.
- Vinegar**, manufacture of, by means of bacteria (WURM), 1880, A., 334; 1881, A., 128.  
 behaviour of tin and lead alloys with (FORDOS), 1875, 108; (WEBER), 1879, A., 990.  
 frequent occurrence of cupric acetate in, and estimation of copper in (RICHE), 1877, ii., 927.  
 valuation of (JEHN), 1878, A., 345.  
 detection of adulteration in (HILGER), 1876, i., 766; ii., 329; 1877, ii., 232.  
 detection of mineral acids in (STROHL), 1875, 188; 1877, i., 752.  
 estimation of sulphuric acid in (THRESH), 1876, i., 107; (YOUNG), 1877, ii., 917; (CASALI), 1881, A., 314.
- Vinegar, lead-**, estimation of acid in (SALOMON), 1880, A., 189.
- Vinegar, wood-**, acids of (KRAEMER and GRODZKI), 1879, A., 43.
- Vines**. See under Agricultural Chemistry.
- Vinyl bromide** (*bromethylene*) (FUCHS), 1873, 45; (LWOFF), 1878, A., 963; (KITSCHEROFF), 1881, A., 882.  
 decomposition of, by sodium (BRUNNER and BRANDENBURG), 1878, A., 211.  
 polymerisation of (LWOFF), 1881, A., 400.  
*tribromide*. See Ethane, *tribrom-*.
- Vinyl ethyl oxide**, and the action of iodine, sulphuric acid and water on (WISLICENUS), 1878, A., 776.  
*dichloro-* (GETTHER and BROCKHOFF), 1873, 867.  
*trichloro-* (HENRY), 1880, A., 232.
- Vinyl iodo-dibromide**. See Ethane, *dibromiod-*.
- o-Vinylanisoil* (PERKIN), 1878, T., 211.  
*di-bromo-* (PERKIN), 1881, T., 418.
- p-Vinylanisoil* (PERKIN), 1877, ii., 668; 1878, T., 214.
- Vinyldiacetonamine**, cause of the formation of (HEINTZ), 1878, A., 483.
- Vinyldiethylamine** (LADENBURG), 1882, A., 1194.
- Vinylethylcarbinol** (*pentenyl alcohol*), heat of combustion of (LUGINIS), 1881, A., 9.
- p-Vinylisopropylbenzene* (*p-isopropylstyrene*) (PERKIN), 1877, i., 401; ii., 663.
- Violaceæ**, occurrence of salicylic acid in (MANDELIN), 1882, A., 548.
- Violacein**. See Eupittonic acid.
- Violet de Paris** (LAUTH), 1873, 910.  
 See also Methyl-violet under Colouring matters.
- Violet syrup**, improved mode of preparing (BERNBECK), 1882, A., 248.
- Virial** (MAXWELL), 1875, 494.
- Viridic acid**, colouring matter of (ČECH), 1877, i., 478.
- Viridine**. See Alkali-green under Colouring matters.
- Viscose**. See Dextran under Carbohydrates.
- Viscosity** a cause of catalysis (GUYARD), 1879, A., 876.  
 of gases (MEYER), 1873, 838; (CROOKES), 1881, A., 678, 971.  
 of liquids (PRIBRAM and HANDL), 1882, A., 272.  
 of sulphur (PISATI), 1878, A., 268.
- Viscum album*. See Mistletoe.
- Vital phenomena**, physico-chemical forces in (BECQUEREL), 1875, 372, 528.  
 influence of change in barometric pressure on (BERT), 1873, 641, 762, 1249; (v. LIEBIG), 1875, 1273.
- Vitellin**, Weyl's (GRÜBLER), 1881, A., 625.  
 vegetable (BARBIERI), 1879, A., 272.
- Vitellolutein** and **vitellorubin** (MALY), 1882, A., 76.
- Vitrified forts** at Craig Phadrick, Inverness, and Hartmannswillerkopf, Haute Alsace, examination of the materials of (DAUBRÉE), 1881, A., 394, 703.



**Vitriol**, oil of. See Sulphuric acid.

**Vivianite** (VOM RATH), 1881, A., 549;  
(MALLARD), 1881, A., 690.

crystallised, in bones from the Lai-  
bach peat-bog (BECKE), 1878, A.,  
710.

artificial production of (GIRARDIN),  
1881, A., 1000.

as a petrifying medium (FRAAS), 1878,  
A., 711.

**Volborthite** (SILLIMAN), 1881, A., 1108.  
Siberian, composition of (GENTH),  
1878, A., 382.

**Volcanic** action and meteorites (TSCHER-  
MAK), 1876, i., 536; 1877, i., 178.  
ashes, origin of (RICCIARDI), 1882,  
A., 1177.

from Cotopaxi (SANTOS), 1880, A.,  
97.

ejected from Etna on January 23rd,  
1882 (RICCIARDI), 1882, A., 705.

fall of, in Norway (ZIRKEL), 1875,  
744.

from Turrialba in Costa Rica  
(LANG), 1875, 1244.

from Vesuvius. See under Vesuvius.  
crater, products from a (DAUBRÉE),  
1881, A., 237.

dust which fell, January 4th, 1880,  
at Dominica (DAUBRÉE), 1880, A.,  
453.

earth of the Solfatara of Puzzuoli,  
action of, on the diseases of the  
vine (DE LUCA), 1873, 523; 1874,  
184.

energy, origin and cosmical relations  
of (MALLET), 1873, 362.

gases, composition of, in the Island  
of St. Paul (VÉLAIN), 1875, 1242.

glass, capillary, of Kilauea, Hawaii,  
called Pélé's hair, composition of  
(DANA), 1880, A., 536.

phenomena of Nisyros (GORCEIX),  
1873, 1212; 1874, 347, 561, 1073;  
1875, 48.

chemical decomposition (dissoci-  
ation) applied to the interpret-  
ation of some (SILVESTRI), 1876,  
i., 200.

region of Western South America  
(BOUSSINGAULT), 1874, 562.

rocks. See Rocks.

tufa, deposits of, in the province of  
Salerno (RICCIARDI), 1882, A., 371.  
See also Lavas and Vesuvius.

**Volumes**, law of, for the liquid state  
(KRAFFT), 1882, A., 1272.

of some compounds of the benzene,  
naphthalene, anthracene, and  
phenanthrene series (RAMSAY),  
1881, T., 63.

**Volume** of liquids, at their boiling  
points, obtainable from unit-  
volumes of their gases (RAMSAY),  
1879, T., 463.

**Volume, molecular** (CLARKE), 1877, ii.,  
831; (RAMSAY), 1879, T., 464.

law of (SCHRÖDER), 1878, A., 926, 769;  
1879, A., 197, 198, 430.

relation of, to atomic combination  
(BRÜHL), 1882, A., 446; (SCHIFF),  
1882, A., 1024.

of liquid carbon compounds (WIEBE),  
1879, A., 1002; 1880, A., 88,  
784.

of solid carbon compounds (SCHRÖDER),  
1879, A., 610; 1880, A., 21, 694.

of solids (WILSON), 1882, A., 275.

of solutions (BERTHELOT), 1873, 715.

of crystallisation-water (CLARKE),  
1875, 1157.

of certain acetates (SCHRÖDER), 1881,  
A., 969.

of alums (PETTERSSON), 1874, 760;  
1882, A., 1259.

of mixtures of dibromethane and  
benzene (BROWN), 1881, T., 210.

of chloro-derivatives of the ethylic  
series (HINRICHS), 1873, 1014.

of dihydroxydiphenylsulphone (ANNA-  
HEIM), 1877, i., 79.

of rare earths and their salts (NILSON  
and PETTERSSON), 1880, A., 838;  
1881, A., 494.

of isomorphous salts (PETTERSSON),  
1874, 760; 1877, i., 267, 437;  
1882, A., 1259.

of selenates (PETTERSSON), 1877, i.,  
267, 437.

of silver salts of organic acids (SCHRÖ-  
DER), 1878, A., 133.

of sulphates (PETTERSSON), 1877, i.,  
267, 437.

See also Volume, specific.

**Volume, specific** (RAMSAY), 1879, A.,  
464.

of metals, non-metals, and organic  
compounds (THORPE), 1880, T.,  
141, 366.

of water of crystallisation (THORPE  
and WATTS), 1880, T., 102.

of liquids (ZANDER), 1882, A., 1259.

of solutions of iodine and periodic acids  
(THOMSEN), 1874, 433.

of oxides (BRAUNER and WATTS),  
1881, A., 219.

of oxygen (RAMSAY), 1879, T., 470.

of phosphorus (THORPE), 1875, 731;  
1876, ii., 41.

See also Volume, molecular.

**Vorhauserite** from the Pesmeda Ridge  
(DOELTER), 1876, i., 888.

**Vulpic acid** (SPIEGEL), 1881, A., 97, 173, 1036.  
and its constitution (SPIEGEL), 1882, A., 1076.

## W.

**Wackenroder's solution**, polythionic acids contained in (CURTIUS), 1881, A., 1098.

See also the Thionic acids under Sulphur.

**Wagnerite** (v. KOBELL), 1873, 1207.  
from Bamle, in Norway (PISANI), 1879, A., 441.

See also Magnesium phosphate.

**Waldivin** (TANRET), 1881, A., 441.

**Walkerite**. See Pectolite.

**Walnut**, inosite from the leaves of the (TANRET and VILLIERS), 1877, ii., 304; 1878, A., 399.

**Walpurgin** (WINKLER), 1873, 606; (WEISBACH), 1873, 1109.

**Wapplerite** (FRENZEL), 1875, 738; (SCHRAUF), 1881, A., 532.

See also Calcium arsenate.

**Ware**, Bidrai, Indian, composition of (FLIGHT), 1882, T., 139.

**Warmers** for railway and other carriages, use of crystallised sodium acetate for (ANCELIN), 1882, A., 114.

**Warming** with hot air (KAYSER), 1878, A., 250.

**Warwickite** (SMITH), 1875, 46.

**Washing apparatus**, self-acting (GAWALOWSKI), 1875, 38.

**Washing bottle**, Kempf's, new application of (SAUER), 1874, 287.

**Water**, what constitutes pure? (REICHARDT), 1873, 1065.

gaseous, liquid and solid states of (THOMSON), 1875, 126.

synthesis of; a lecture experiment (MÜLLER), 1877, i., 438; (ROSENFELD), 1882, A., 138.

preparation of, free from ammonia (THOMSON), 1879, A., 878.

blue colour of; a lecture experiment (MEYER), 1882, A., 689.

spectrum of (SCHÖNN), 1878, A., 693; (HUGGINS), 1881, A., 1; (LIVEING and DEWAR), 1881, A., 957; 1882, A., 251.

electrolysis of (EXNER), 1879, A., 577; (STREINTZ), 1881, A., 962; (TOMMASI), 1882, A., 134, 353, 1019; (DEHÉRAIN and MAQUENNE), 1882, A., 459.

in electrolysis is not decomposed by the current (BOURGOIN), 1873, 27.

**Water**, phenomena accompanying the electrolysis of, by oxidisable electrodes (GLADSTONE and TRIBE), 1876, ii., 152.

electric conducting power of (KOHLE-RAUSCH), 1877, i., 429.

heat of formation of (SCHULLER), 1882, A., 135, 682.

heat of formation of oxygenated (BERTHELOT), 1876, i., 183.

specific heat of (WÜLLNER), 1878, A., 104; (HENRICHSEN), 1879, A., 1002; (PFAUNDLER and BAUMGARTNER), 1880, A., 601.

thermal conductivity of (BOTTOMLEY), 1881, A., 966.

temperature of combustion and dissociation of the vapour of (MALLARD and LE CHATELIER), 1882, A., 453.

tension of the vapour of, in presence of different hygroscopic bodies (MÜLLER-ERZBACH), 1881, A., 782.

expansion of, by the absorption of gases (ÅNGSTRÖM), 1882, A., 687.

expansion of, by heat (VOLKMANN), 1882, A., 135.

freezing point of, lowering of, by pressure (DEWAR), 1880, A., 845; 1882, A., 270.

maximum density of (PIARRON DE MONDÉSIR), 1874, 220; (v. HOFMANN), 1874, 765.

dissociation of (MALLARD and LE CHATELIER), 1882, A., 453.

decomposition of (WRIGHT and KENNIE), 1880, A., 686.

decomposition of, by certain metalloids (CROSS and HIGGIN), 1879, T., 249.

decomposition of, by joint action of aluminium and of aluminium iodide, bromide or chloride, with some instances of reverse action (GLADSTONE and TRIBE), 1875, 822.

decomposition of, by iron (TROOST and HAUTEFEUILLE), 1875, 610; (RAMANN), 1881, A., 879.

decomposition of, by platinum (SAINT-CLAIRE DEVILLE and DEBRAY), 1876, ii., 43.

distance between the molecules of (HERWIG), 1879, A., 194.

mode of intervention of, in chemical actions (BECQUEREL), 1874, 218.

mass-influence of (OSTWALD), 1881, A., 497.

drops floating on the surface of (REYNOLDS), 1882, A., 5.

amount of gases in, on boiling (REICHARDT), 1876, i., 354.

**Water**, influence of coloured light on the evaporation of (BAUDRIMONT), 1879, A., 863.

appearance of nitrous acid during the evaporation of (WARINGTON), 1881, T., 229.

ascent of, caused by evaporating surfaces (TOLLENS), 1877, i., 271.

action of distilled, on copper (CARNELLEY), 1876, ii., 4.

as an oxidising and reducing agent (ERLENMEYER), 1877, ii., 581.

separation of, within the molecule (ROSER), 1882, A., 1045.

coercive action of, on salts (FAVRE and VALSON), 1873, 31, 32, 129; 1874, 120, 650; 1875, 330.

**Water of crystallisation**, molecular volume of (CLARKE), 1875, 1157.

specific volume of (THORPE and WATTS), 1880, T., 102.

relation of, to the volumes of solutions of hydrated salts (SOUTHWORTH), 1880, A., 212.

influence of, on crystalline form (v. NORDENSKIÖLD), 1874, 759.

relation between the amount of, and the solubility of salts (SCHERBATSCHOFF), 1874, 333.

estimation of (LASPEYRES), 1875, 663.

**Water of dilution**, influence exerted upon the course of certain chemical changes by variations in the amount of (MUIR and SLATER), 1880, T., 60.

**NATURAL WATER**—

**Drainage Water**. See under Agricultural Chemistry.

**Rain Water**, crystals from (TISSANDIER), 1876, i., 891.

amount of gases in (REICHARDT), 1876, i., 354.

amount of oxygen dissolved in (GÉRARDIN), 1873, 740.

of Montsouris, ammonia in (LÉVY), 1877, ii., 509; 1878, A., 243; 1880, A., 848.

off the north coast of New Guinea, atmospheric contents of (BUCHANAN), 1878, T., 467.

collected at Rothamsted (LAWES, GILBERT and WARINGTON), 1882, A., 889.

which accompanied the volcanic dust which fell January 4th, 1880, at Dominica (DAUBRÉE), 1880, A., 453.

disappearance of ammonia from (HOUSSEAU), 1876, ii., 650.

action of lead on (VAN DE VYVERE), 1876, i., 342.

**NATURAL WATER**—

**Rain Water**, action of the Nessler test on (GARSIDE), 1875, 1287; (WATSON), 1875, 1288.

See also under Agricultural Chemistry.

**River Water** (TIDY), 1880, T., 268.

variation in the composition of (WANKLYN), 1876, i., 357.

disappearance of ammonia from (HOUSSEAU), 1876, ii., 650.

amount of gases in (REICHARDT), 1876, i., 354.

proportion of potash to soda in (CLOËZ), 1882, A., 372.

amount of oxygen dissolved in (GÉRARDIN), 1873, 740.

contamination of (FISCHER), 1878, A., 813.

the various sources of impurity to which, is subject, and the means whereby purity is maintained by nature, or may be effected by art (TIDY), 1880, T., 286.

oxidation experiments with polluted (TIDY), 1880, T., 309; (FRANKLAND), 1880, T., 519.

peaty, action of air on (HALCROW and FRANKLAND), 1880, T., 506.

in its relation to agriculture. See Agricultural Chemistry.

of the Assiniboine and Red Rivers, Canada, composition of (ADAMS), 1881, A., 562.

of the Chélif, composition of (BALLAND), 1879, A., 699.

of the Danube at Budapest (BALLÓ), 1878, A., 480.

of the Dart (PIHPSON), 1879, A., 906.

of the Lea, composition of filtered (TIDY), 1880, T., 274.

of the Liffey, estimation of ammonia in (STUDDERT), 1876, ii., 326.

of the Mahanuddy, composition of (NICHOLSON), 1873, 229.

of the Moldau, composition of (STOLBA), 1874, 971.

of the Nile, composition of (TIDY), 1880, T., 277, 290.

amount of nitric acid in (D'ABADIE), 1879, A., 905.

of Parana and Uruguay, composition of (KYLE), 1878, A., 959.

of the Seine and the Ourcq, action of, on lead (FORDOS), 1874, 232.

of the Seine, nitrates and ammonia in (BOUSSINGAULT), 1876, ii., 181.

of the Severn and Shannon, composition of (TIDY), 1880, T., 232.

of the Thames, composition of filtered (TIDY), 1880, T., 268.

## NATURAL WATER—

**River Water** of the Thames at Reading, rate of oxidation in (FRANKLAND), 1880, T., 522.

of the Vartry (FLETCHER), 1880, A., 21.

some peculiarities of, and its action on boiler-plates (TICHBORNE), 1879, A., 85.

of the Vyrnwy, composition of (ESTCOURT), 1879, A., 906.

estimation of impurities in (VOHL), 1877, ii., 919.

estimation of carbonic acid in (HOUSSEAU), 1876, ii., 426.

estimation of nitrates in (PERKINS), 1881, A., 1173.

**Lake Water**, saline, existence of boric acid in (DIEULAFAIT), 1881, A., 1019.

of Como and Geneva, colour of (AITKEN), 1882, A., 1017.

of the Dead Sea, constitution of (FLECK), 1882, A., 24.

existence of lithium and boric acid in notable quantities in (DIEULAFAIT), 1882, A., 1037.

of Loch Lomond, colour of (AITKEN), 1882, A., 1017.

of Thirlmere, composition of (H. and C. GRIMSHAW), 1879, A., 211; (ESTCOURT), 1879, A., 906.

**Spring and Mineral Waters**, composition of (PHILPSON), 1880, A., 62.

of the Airthrey Springs at the Bridge of Allan (JOHNSTONE), 1875, 872.

sulphurous, of Aix in Savoy, and of Marlioz (WILLM), 1878, A., 561.

of Ambrosiusbrunn-Quelle, Marienbad, Bohemia, examination of (GINTL), 1882, A., 25.

from Amherst, Burnah (ROMANIS), 1882, A., 706.

of the Warm Spring at Assmannshausen (FRESENIUS), 1878, A., 209.

of Auvergne (WILLM), 1879, A., 446.

from Bad Ems, composition of four (FRESENIUS), 1873, 484.

hot, at Bagnoles de l'Orne, and the deposits formed in the conduits (DELACHANAL), 1881, A., 81.

from Ballynahinch Spa Sulphur Well (ANDREWS), 1875, 1243.

of Baréges (FILHOL), 1882, A., 293.

from the thermal spring of Battaglia (SCHNEIDER), 1874, 881.

of the Acid Well (Sauerbrunnen) at Bilin (HUPPERT), 1878, A., 209.

from the Sulphur Spring of Bir Kerawi in the Lybian Desert (HESSELT), 1875, 1168.

## NATURAL WATER—

**Spring and Mineral Waters** of the Birtesborn and Gerolstein Springs in the Eifel (VOHL), 1878, A., 714.

of the Blowing Wells, near Northallerton (FAIRLEY), 1882, A., 372.

thermal, of Bourbonne-les-Bains, contemporaneous formation of minerals in (DAUBRÉE), 1875, 1167; 1876, i., 533.

of Bourboule (RICHE), 1880, A., 455.

of Budapest (BALLÓ), 1879, A., 125.

of Bussang (Vosges) (WILLM), 1880, A., 455.

of Buxton, chemical examination of (THRESH), 1881, T., 388; 1882, T., 117.

of the chalybeate springs of Carlstad (ALMEN), 1880, A., 20.

of Casteggio (A. and G. DE NEGRI), 1878, A., 715.

of Cephalonia (WIBEL), 1873, 741.

of Challes, in Savoy (WILLM), 1878, A., 560.

from the Belvedra Spring at Chur (HUSEMANN), 1874, 671.

from a colliery, composition of (WALLACE), 1880, A., 591.

curious concretion balls derived from (ANDREWS), 1879, A., 1021.

from Cornish mines, composition of (PHILLIPS), 1873, 857; 1874, 967.

from the warm springs of Costa Rica (v. FRANTZIUS), 1874, 36.

of the Conban, in the Caucasus (WROBLEWSKI), 1879, A., 125.

of Cransac (Aveyron) (WILLM), 1880, A., 454.

of the Deutsch-Kreutzer Sauerbrunnen in Hungary (FRESENIUS), 1875, 243.

sulphurous, of Eaux-Bonnes, influence of a limited supply of air on (MARTIN), 1873, 861.

from the Empire Mine of the Luzerne Company (BAKER), 1876, i., 890.

of the Ferdinandsbrunn-Quelle at Marienbad, Bohemia (GINTL), 1880, A., 306.

from a hot spring, Fiji Islands (LIVERSIDGE), 1881, A., 564, 1019.

at Salzschlirf, chemical examination of (REICHARDT), 1881, A., 29.

at Grouville, Jersey (MORGAN), 1879, A., 1072.

from the Grindbrunnen at Frankfurt-on-the-Maine (FRESENIUS), 1876, i., 537.

of the Harrogate Spas, monthly analytical examination of (DAVIS), 1873, 1089.



## NATURAL WATER—

**Spring and Mineral Waters** of the Alum Well, Harrogate (DAVIS), 1881, T., 19.

of the Chloride of Iron Spa, Harrogate (BOTHAMLEY), 1881, T., 502.

monthly analytical examinations of (DAVIS), 1873, 1091.

of the Montpellier strong Sulphur Well, Harrogate (WILSON and INGLE), 1881, T., 510.

from the Old Crescent Well, Harrogate (FAIRLEY), 1875, 243.

of the Old Sulphur Well, Harrogate, monthly analytical examination of (DAVIS), 1873, 1090.

contributions to the history of the (THORPE), 1877, i., 181; 1881, T., 498.

from the Carlsquelle at Helmstedt (FRESENIUS), 1873, 1213.

from the Stahlbrunnen at Homburg (FRESENIUS), 1873, 742.

from the Hunyadi János Springs at Budapest (FRESENIUS), 1879, A., 366.

from a spring in Java containing iodine (REICHARDT), 1873, 741.

of Josefsquelle (HUPPERT), 1878, A., 209.

of Kanizer, or Kainzen (MULWA), 1881, A., 30.

from the Kirchhofbrunnen at Leipzig (BACH), 1874, 969.

of the Kyll-Thal in the Eifel (VOHL), 1877, i., 448; 1878, A., 559.

of the chalybeate spring, Kingstead, St. Edmunds (JOHNSTONE), 1881, A., 1112.

from the Liebfrauensee of Kissingen (BENDER), 1873, 359.

in the neighbourhood of Lake Laach (BENDER), 1878, A., 18.

from sulphur springs at Lostorf, in the Solothurn, Jura (BRIGEL), 1873, 743.

sulphuretted, of Luchon (GARRIGOU), 1874, 1148, 1149; (FILHOL), 1874, 1150.

of "Marienbrunnen," near Iserlohn, Westphalia (VOHL), 1879, A., 211.

of Marpingen (VOHL), 1878, A., 714, 843.

of Mattigbad, Mattighofen, Upper Austria (LANGER), 1873, 1012.

of Mehadia in Hungary (SCHNEIDER and KOETTSTORFER), 1873, 359.

of Moffat and Hertfell Spas (JOHNSTONE), 1875, 436.

## NATURAL WATER—

**Spring and Mineral Waters** of the Moritzquelle, in S. Styria (BUCHNER), 1876, ii., 57.

of the hot spring at Natmoo, near Maulmain, Burmah (ROMANIS), 1881, A., 1019.

of Neudorf, near Petschau, in Bohemia (GINTL), 1877, ii., 861.

of Niederbrunn in Unter-Elsass (BURI), 1881, A., 80.

from a hot spring, New Britain (LIVERSIDGE), 1881, A., 564, 1019.

of the Oberbrunnen, Flinsberg, Silesia (POLECK), 1880, A., 226.

of the Oberbrunnen, Salzbrunn in Silesia (FRESENIUS), 1882, A., 1178.

bitter, of Ofner Rádóczy (VOHL), 1879, A., 211.

of Ó Tura, in Hungary (WEIDEL and GOLDSCHMIEDT), 1878, A., 18.

from the springs of Partenkirchen (WITTSTEIN), 1873, 486.

of Passugg, Solis, and Tiefenkasten (v. PLANTA), 1879, A., 126.

of the hot spring at Pfäfers in Switzerland (BUCHNER), 1877, ii., 284.

at Portobello near Dublin, amount of ammonia in (CAMERON), 1873, 256.

thermal, of the Pyrenees, nature of the sulphur compound in (FILHOL), 1873, 861; 1874, 1149.

of Rosheim in Alsace (POWER), 1879, A., 698.

of Rouen and Forges-les-Eaux, amount of iron in (HOUEAU), 1881, A., 397.

at St. Anna, near Cernowic (FARSKÝ), 1882, A., 371.

of St. Dunstan's Well, Melrose (JOHNSTONE), 1879, A., 905.

of the chalybeate springs of St. Moritz in the Upper Engadine (HUSEMANN), 1876, i., 358.

of Saint-Nectaire, presence of mercury in (GARRIGOU), 1877, ii., 418;

(WILLM), 1879, A., 697.

of San Miquel, Azores (FOUQUÉ), 1873, 1012.

from sulphuretted springs of S. Venera al Pozzo (SILVESTRI), 1873, 863.

of Savoy, sketch of the origin of, with some analyses (LÉVY), 1880, A., 453.

of Schlangenbad, chemical examination of (FRESENIUS), 1878, A., 715.

of Schinznach (OBERLIN and SCHLAGDENHAUFFEN), 1882, A., 589, 932.

of the Schönbornsquelle at Kissingen (v. GORUP-BESANEZ), 1878, A., 843.

## NATURAL WATER—

**Spring and Mineral Waters** from a chalybeate spring at Sellafeld near Whitehaven (WATSON), 1875, 1169; 1876, i., 890.  
 from springs containing arsenic, iron, and sodium in the Sinestrathal of the Graubündner, Lower Engadine (HUSEMANN), 1876, i., 362.  
 of the mineral spring at Suhl (REICHARDT), 1879, A., 516.  
 from the mineral springs at Tarasp in the Lower Engadine, chemical investigation of (HUSEMANN), 1876, i., 359.  
 of the Tempelbrunnen at Rohitsch (BUCHNER), 1877, ii., 176.  
 of "Tenniger Bad," Somvixer Tobel, Grisons (MEYER), 1879, A., 33.  
 thermal, of Termini-Imerese (PATERNO and MAZZARA), 1879, A., 698.  
 thermal, of Thermopylæ (JAHN), 1878, A., 391.  
 of Trefriew (CARNELLEY), 1875, 436.  
 from the sulphursprings of Trentschin-Teplitz (SCHNEIDER), 1874, 881.  
 hot, of the littoral chain of Venezuela (BOUSSINGAULT), 1881, A., 563.  
 of Vichy and its neighbourhood (DE GOUVENAIN), 1873, 859.  
 of the brine springs of Volterra (FUNARO), 1878, A., 652; 1880, A., 146.  
 of the Royal William Medical establishment at Wiesbaden (FRESENIUS), 1874, 968.  
 of Württemberg (REGELMANN), 1875, 1170.  
 of Yorkshire, contributions to the history of (THORPE), 1881, T., 497.  
 of the Boston Spa, Thorpe-Arch, Yorkshire (KENNEDY and JOHNSTONE), 1881, T., 515.  
 containing arsenic, iron, and sodium (HUSEMANN), 1876, i., 362.  
 containing iron (REICHARDT), 1873, 741.  
 ferruginous and nitrated (WILLM), 1880, A., 617.  
 chalybeate containing lime (CARO), 1874, 781.  
 ferruginous carbonated (VILLE), 1881, A., 1112.  
 saline, law of the formation of (DIEULAFAIT), 1881, A., 1018.  
 existence of boric acid in (DIEULAFAIT), 1881, A., 1019.  
 natural sulphuretted, formation of (PLAUCHUD), 1877, i., 704; 1880, A., 709.

## NATURAL WATER—

**Spring and Mineral Waters**, natural sulphuretted, composition of (FRESENIUS), 1876, ii., 549.  
 origin of the sulphides found in (POLLACCI), 1876, i., 38.  
 action of, on cast-iron (PRIWOZNIK), 1873, 1106.  
 action of, on metals (DAUBRÉE), 1881, A., 238.  
 sulphuration of copper and iron by (DE GOUVENAIN), 1875, 1168.  
 amount of gases in (REICHARDT), 1876, i., 354.  
 presence of strontium in (DIEULAFAIT), 1877, ii., 577.  
 alkaline, method for the analysis of (FRESENIUS), 1876, ii., 544.  
 use of Smithson's pile for the detection of mercury in (LEFORT), 1880, A., 510.  
 a new method for estimating carbon dioxide in (BORCHERS), 1878, A., 917.  
 estimation of hydrogen sulphide in (LAND), 1874, 1007.  
 estimation of sulphur compounds in (GARRIGOU), 1874, 1148.  
**Sea Water**, experiments on (SONSTADT), 1874, 1006.  
 composition of (TORNÖE), 1879, A., 1060; (SCHMELCK), 1881, A., 81.  
 atmospheric contents of (BUCHANAN), 1878, T., 456.  
 chlorination of (BOUQUET DE LA GRYE), 1882, A., 923.  
 specific gravity and chlorination of, taken by the "Travailleur" in 1881 (BOUQUET DE LA GRYE), 1882, A., 798.  
 compressibility of (BUCHANAN), 1878, T., 451.  
 colour of (AIRKEN), 1882, A., 1017.  
 air contained in (TORNÖE), 1879, A., 1060.  
 and salt marshes around Montpellier, ammonia contained in the (AUDOY-NAUD), 1876, i., 356.  
 presence of ammoniacal salts in (DIEULAFAIT), 1879, A., 9.  
 carbonic anhydride in (TORNÖE), 1879, A., 1061.  
 gases contained in (JACOBSEN), 1873, 860; (BUCHANAN), 1878, A., 197.  
 extraction of magnesium salts from (SCHLESING), 1881, A., 1180.  
 organic matter in (JAGO), 1881, T., 320.  
 existence of zinc in, of all ages (DIEULAFAIT), 1880, A., 708.

## NATURAL WATER—

**Sea Water**, power of seaweeds in taking iodine from (STANFORD), 1878, A., 170.  
 action of, on iron and steel plates (KERN), 1879, A., 561.  
 action of, on land (REINDERS), 1877, i., 106.  
 of the Mediterranean, colour of (AITKEN), 1882, A., 1017.  
 from the Suez Canal, composition of (DURAND-CLAYE), 1874, 971.  
 estimation of carbon dioxide in (BUCHANAN), 1878, T., 460.  
**Potable or Drinking Water** (MILLS), 1878, T., 57.  
 of Berlin (MÜLLER), 1873, 1267.  
 of County Dublin (FLETCHER), 1880, A., 766.  
 supplied to Frankfort-on-the-Maine, composition of (ANON.), 1875, 437.  
 of the Isthmus of Panama (AILLAUD), 1882, A., 1178.  
 of Prince Edward's Island, Nova Scotia (HAYES), 1875, 244.  
 four, for Turin, composition of (LIEBEN), 1880, A., 591.  
 which supplies Versailles, insalubrity of (DECAISNE), 1873, 1066.  
 natural constants of (MILLS), 1878, T., 64.  
 inconstant composition of (CAMERON), 1879, A., 485.  
 sanitary notes on (BISCHOF), 1879, A., 985.  
 hygienic significance of (BARTH), 1882, A., 1142.  
 conditions which should be fulfilled by (FISCHER), 1877, ii., 944; 1878, A., 456.  
 influence of impure, on health (EMMERICH), 1880, A., 488.  
 physical properties of (GÉRARDIN), 1876, ii., 336.  
 preservation of (SCHIFF), 1879, A., 85, 1072.  
 certain circumstances which affect the purity of (MUIR), 1876, ii., 119.  
 contamination of (AEBY), 1874, 1184.  
 contamination of a, by gas liquor (VOHL), 1877, ii., 920.  
 contamination of, by the waste from a gas works (FISCHER), 1874, 395.  
 purification of (CROOKES), 1874, 300; (BOHLIG), 1878, A., 920.  
 containing magnesia, purification of (GÜNSBERG), 1878, A., 920.  
 sugar as a test for the purity of (REYNOLDS), 1879, A., 1062.  
 value of carbon filters in purifying (MÜLLER), 1873, 302, 1268.

## NATURAL WATER—

**Potable or Drinking Water**, ferric chloride as a purifier of (GUNNING), 1879, A., 1072.  
 effect of filtration of, through spongy iron (MILLS), 1878, T., 66.  
 spongy iron and animal charcoal as materials for purifying (LEWIN), 1879, A., 343.  
 magnesia-preparation for purifying (BOHLIG), 1878, A., 350.  
 softening of (KALMANN), 1876, ii., 217; (GROSSMANN), 1879, A., 985.  
 removal of gypsum from, by means of barium oxalate (ANTHON), 1876, ii., 217.  
 softening of, by boiling with lime (STINGL), 1873, 413.  
 disappearance of ammonia contained in (HOUEAU), 1876, ii., 650.  
 occurrence of bacteria in (ANON.), 1879, A., 817.  
 destruction of microscopic animals in (LANGFELDT), 1881, A., 1179.  
 relation of lime to carbonic acid in (MAYER), 1874, 138.  
 running through iron pipes, disappearance of nitrogenous organic matter from (BLYTH), 1875, 386.  
 putrescent organic matter in (BISCHOF), 1877, ii., 812.  
 spontaneous oxidation of organic matter in (FRANKLAND), 1880, T., 517.  
 oxidation of organic matter in, by filtration through various media (HATTON), 1881, T., 258.  
 of artesian wells, oxygen in the (GÉRARDIN), 1874, 968.  
 urea and crenate of ammonia in (PHIPSON), 1878, A., 754.  
 action of copper on (CARNELLEY), 1876, ii., 1.  
 action of copper pipes on (REICHARDT), 1874, 97.  
 action of lead on (CHRISTISON), 1873, 1006; (BELGRAND), 1874, 231; (DUMAS), 1874, 232; (FORDOS), 1874, 232, 872; (BOBIERRE; MARAIS), 1874, 233; (PIERRE), 1874, 1064; (VAN DE VYVERE), 1876, i., 342; (BISCHOF), 1877, i., 428; (REICHARDT), 1880, A., 198.  
 action of lead and zinc on (ROCQUES), 1880, A., 766.  
 action of zinc on (SNIJDERS), 1878, A., 838; 1879, A., 11.  
**Water analysis** :—  
 examination of (TIEMANN), 1873, 945; 1874, 91; (ANON.), 1874, 400; (KAEMMERER), 1874, 1006; (DEER-

ING), 1875, 679; (GARSIDE), 1875, 1287; (FRANKLAND), 1876, i., 825; (RICH), 1876, ii., 554; (HEHNER), 1878, A., 334; (BOHLIG), 1878, A., 920; 1879, A., 963; (DUPRÉ and HAKE), 1879, T., 165; (PITPSON), 1880, A., 62; (MÜLLER), 1880, A., 139; (FIELD), 1881, A., 644; (WAGNER), 1882, A., 556; (MALLET), 1882, A., 1325.

#### Water analysis:—

Frankland and Armstrong's method of (BISCHOF), 1874, 600.

probable error in (MILLS), 1878, T., 58.

Bohr's colorimetric process for the examination of (PUSCH), 1879, A., 553.

Williams' nitrogen test for (BLUNT), 1882, A., 100.

evaporator for (MILLS), 1878, T., 62; (DUPRÉ and HAKE), 1879, T., 165.

sugar as a test of the purity of (REYNOLDS), 1879, A., 1062.

detection of free carbonic anhydride in (v. PETTENKOFER), 1876, i., 435.

detection of carbonic anhydride in, by the Nessler test (SALZER), 1881, A., 940.

detection of lead in (HARVEY), 1881, A., 1173.

detection of nitric acid in (FRESENIUS), 1876, ii., 544; (WAGNER), 1882, A., 556.

detection of nitric acid in, by gold purple (VOGEL), 1876, i., 744.

detection of nitrous and nitric acids in (KAEMMERER), 1874, 1006; 1875, 912.

detection of nitrous acid in (PLUGGE), 1876, i., 438; (LEEDS), 1879, A., 964.

estimation of the hardness of (MOHR), 1873, 1054; (GARSIDE), 1875, 1287; (WARTHA), 1880, A., 923.

estimation of organic carbon and nitrogen in, simultaneously with the estimation of nitric acid (WILLIAMS), 1881, T., 144.

estimation of organic carbon in (SMETHAM), 1881, A., 196; (PERKINS), 1881, A., 197.

estimation of carbonic acid in (HOUZEAU), 1876, ii., 426.

estimation of carbonic acid in, and of caustic alkalis in presence of carbonates, by the Nessler test (SALZER), 1881, A., 940.

#### Water analysis:—

application of the ferrosopyrogallie reagent to the estimation of bicarbonates in (JACQUEMIN), 1877, i., 340.

estimation of cellulose and modified cellulose in (WANKLYN and COOPER), 1878, A., 754.

estimation of colour in (KING), 1875, 1052; (CAMERON), 1877, i., 231.

estimation of gases in (THOMAS), 1877, ii., 806; (BELLAMY), 1878, A., 91; (THRESH), 1881, T., 399.

estimation of impurities in (VOHL), 1877, ii., 919.

estimation of iron in (CARNELLEY), 1875, 285.

estimation of nitric acid in (VAN BEMMELEN), 1873, 90; (THORPE), 1873, 545; (FISCHER), 1873, 1054; 1875, 481; (HOFFMANN), 1876, i., 435; (WARINGTON), 1879, T., 578; (EDER), 1879, A., 274; (SETTEGAST), 1879, A., 829; (WILLIAMS), 1881, T., 100, 144; (KNIGHTS; PERKINS), 1881, A., 1173.

estimation of nitrous acid in (FISCHER), 1875, 185; (PLUGGE), 1876, i., 438; (NICHOLSON), 1876, i., 744; (HERCHER), 1877, ii., 647; (LEEDS), 1879, A., 964.

estimation of organic nitrogen in (PELLET), 1880, A., 62; (WILLIAMS), 1881, T., 144; (BLUNT), 1882, A., 100.

estimation of organic matter in (HERCHER), 1877, ii., 647; (DITTMAR and ROBINSON), 1877, ii., 806; (TIDY), 1879, T., 46; (LECHARTIER), 1879, A., 976; (TIEMANN and PREUSSE), 1880, A., 290; (MALLET), 1882, A., 1324.

action of potassium permanganate on, at different temperatures (WIGNER and HARLAND), 1881, A., 1172.

relation between the organic matter and oxygen in (WEYL and ZEITLER), 1881, A., 650, 1087; 1882, A., 556.

estimation of dissolved oxygen in (KÖNIG and MUTSCHLER), 1878, A., 164; (HUTCHINSON), 1879, A., 77; (TIEMANN and PREUSSE), 1880, A., 137; (KÖNIG and KRAUCH), 1880, A., 421; (BERNTHSEN), 1881, A., 310.

estimation of total solids in (WITSTEIN), 1876, i., 439; (MILLS), 1881, T., 335.



**Water analysis:—**

estimation of sulphuric acid in (HEMPEL), 1876, i., 742; (HAUBST), 1877, ii., 917; (HOUSSEAU), 1878, A., 1006.

distilled, from spirits, examination of (NESSLER), 1882, A., 347.

**Water in its economic and technical relations:—**

refuse, purification of (REICHARDT), 1880, A., 830; (MÜLLER), 1881, A., 854.

from sugar works, purification of (KNAUER), 1880, A., 930.

waste, treatment of, for manuring purposes (AUBREY-VITET), 1882, A., 668.

best means of utilising the, from the manufacture of potato-starch (ANON.), 1877, ii., 943.

for brewing, composition of (KRANDAUER), 1879, A., 1078.

in which malt had been steeped, composition of (DE LEEUW), 1882, A., 993.

composition of the, used in the preparation of silk (GABBA and TEXTOR), 1879, A., 493.

influence of constituents of, on tanning (EITNER), 1878, A., 259.

used for dyeing woollen goods (JARMAN), 1878, A., 625.

boiler-, analysis of (STOCK), 1879, A., 273.

purification of (DE HAËN), 1874, 609; 1876, i., 799; (FISCHER), 1874, 1021; 1876, ii., 334; 1878, A., 168; (WEINLIG), 1874, 1022; (STINGL), 1875, 676; (ANON.), 1875, 676; 1876, i., 132; 1877, ii., 244; (BURFITT), 1876, i., 134; (VIBRANS), 1876, i., 450; (HÉTET), 1878, A., 351; (LANGBEIN), 1879, A., 1073.

See also Agricultural Chemistry, Ice and Steam.

**Water-bath** with self-acting draught (BURSTYN), 1873, 472.

**Water cress** (*Nasturtium officinale*), composition of (V. HOFMANN), 1874, 793; (CHURCH), 1877, ii., 210.

**Water gas.** See Gas.

**Water-glass**, painting with (ANON.), 1876, ii., 236.

use of, in building (WAGNER), 1873, 540.

**Wattevillite** (SINGER), 1881, A., 370.

**Wavellite** (CHURCH), 1873, 110; (STRENG), 1881, A., 528.

**Wax** (ANON.), 1877, ii., 364; 1881, A., 316.

**Wax**, specific gravity of (DIETERICH), 1882, A., 1139.

adulteration of, with tallow (HARDY), 1873, 655.

detection of (HIRSCHSOHN), 1880, A., 763.

bees', electrical properties of (AYRTON), 1879, A., 427.

crystalline structure in (BÖTTGER), 1879, A., 171.

cerotic acid from (SCHALFÉEFF), 1877, i., 454.

adulteration of (BUCHNER), 1879, A., 675.

adulteration of, with Japanese wax (MÈNE), 1874, 1026.

testing of, for adulteration (DONATH), 1873, 194.

testing of, for resin (SCHMIDT), 1877, ii., 642; 1879, A., 283.

Japanese (BURI), 1879, A., 1037.

Mamao (PECKOLT), 1880, A., 129.

**Weber's formula**, numerical value of the constants in (VOIGT), 1878, A., 465.

**Weeds** used as salad, composition of (STORER and LEWIS), 1879, A., 821.

See also under Agricultural Chemistry.

**Weighing** on filters, and limit of, in analysis (SMITH), 1875, 480.

in air, reduction of, to the vacuum (BECKER), 1879, A., 396.

**Weight**,  $\chi$ , simple, decomposition of, effected by Victor Meyer (BRODIE), 1879, T., 673.

**Weight**, molecular, alteration of (JANOVSKY), 1881, A., 862.

determinations of (KNECHT), 1878, A., 264.

Naumann's method of (KOPP), 1878, A., 643.

application of electrolysis to (JADENBURG), 1873, 26.

and mechanical equivalent of heat, alleged relation between (THOMSEN), 1877, i., 164.

vapour-pressure and latent heat, simple relations between (PICTET), 1876, ii., 38; 1877, i., 162.

isomorphism and physiological action, relations between (BLAKE), 1875, 96; 1881, A., 629; 1882, A., 879.

new, from absorption of gases by charcoal (SMITH), 1879, A., 500.

of carbon compounds in relation to the specific heat (V. REIS), 1881, A., 963.

- Weight, molecular**, of homologous compounds, influence of, on the course of incomplete reactions (MENSCHUTKIN), 1882, A., 384.  
 and density of gases, relation between (NAUMANN), 1880, A., 525.  
 of substances, and their specific gravities, relation between, when in the liquid state (THORPE), 1880, T., 141, 327.  
 of hydrofluoric acid (MALLET), 1881, A., 973.  
 of mercurous chloride (FILETI), 1882, A., 466.  
 of phosphorus iodides (TROOST), 1882, A., 1264.  
 of indigotin (v. SOMMARUGA), 1879, A., 532.  
 See also Vapour pressure.
- Welding** of solid bodies induced by pressure (SPRING), 1881, A., 498; 1882, A., 273.
- Weldon mud.** See Manganese dioxide under Manganese.
- Well water.** See Water.
- Wernerite.** See Scapolite.
- Wheat**, baryta in the ash of Egyptian (DWORZAK), 1875, 662.  
 See also under Agricultural Chemistry.
- Wheatstone's bridge** (BROUGH), 1874, 766.  
 best arrangement of, for measuring a given resistance with a given galvanometer and battery (ANON.), 1873, 348.
- Wheelerite**, a new fossil resin (LOEW), 1874, 1073.
- Whey.** See under Agricultural Chemistry.
- Whiskey**, and other spirits, examination of, for methylated spirit and fusel oil (DUPRÉ), 1876, ii., 215.  
 See also Spirits.
- White lead.** See Lead carbonate, basic.
- White precipitate.** See Mercuric ammonium chloride under Mercury.
- Whortleberry juice**, detection of, in wine (GAUTIER), 1876, ii., 330, 428; 1877, ii., 937.
- Willcoxite** (GENTH), 1874, 550.
- Willemite**, volume-constitution of (SCHRÖDER), 1874, 875.  
 See also Zinc silicate.
- Willow**, chemical constituents of, and its pathological formation (JOHANSON), 1879, A., 160.  
 white (*Salix alba*), composition of (PETERMANN), 1882, A., 988.
- Willow bark**, chemistry of (JOHANSON), 1877, i., 720.
- Willow bark**, lactic acid from (BOTT), 1877, ii., 905.
- Wine**, manufacture of (KERNLTER), 1879, A., 681; (BLANKENHORN), 1880, A., 200; (REIHLEN), 1882, A., 905.  
 experiment on the making of wine according to Chaptal's process (MOSCHINI and SESTINI), 1873, 1275.  
 Dochnahl's new method of preparing (WEIGELT), 1879, A., 569.  
 treatment of, with air, during fermentation (OTT), 1873, 660.  
 action of the ferment of sour wine on good (MACAGNO), 1879, A., 817.  
 inversion of beet-sugar for (EUGLING), 1880, A., 833.  
 influence of varying pressures on (WEIGELT), 1880, A., 358.  
 pressing of red (NESSLER), 1879, A., 681.  
 time of first drawing of (WEIGELT and SAARE), 1879, A., 569; 1880, A., 517.  
 fining of (v. BABO), 1877, ii., 379; (MACH), 1879, A., 1078.  
 clarifying and preserving (WEIGERT), 1879, A., 290.  
 influence of acids on the preservation of (MACH and PORTELE), 1881, A., 1090.  
 preservation of, by means of salicylic acid (DENUCE), 1882, A., 1014.  
 influence of tannin on the keeping properties of (MACAGNO), 1880, A., 775.  
 plastering of (POLLACCI), 1879, A., 681, 762; (JAY), 1880, A., 96; (HOUDART), 1880, A., 425; (REICHARDT), 1882, A., 661; (NENCKI), 1882, A., 1248; (CARLES), 1882, A., 1330.  
 influence of, on the weight of the dry extract (GAUTIER), 1877, i., 750.  
 amount of sulphurous acid necessary to prevent the formation of "mother" in (MORITZ), 1882, A., 1336.  
 influence of marc on (NESSLER), 1882, A., 1014.  
 effect of gypsum on the constitution of (KAYSER), 1882, A., 434.  
 freezing point of (RAOULT), 1880, A., 523.  
 action of low temperatures on spirits and (MELSENS), 1873, 1173.  
 freezing of (MELSENS), 1875, 489.  
 improvement of, by heating (PAS-TEUR), 1873, 99.

- Wine, explosion produced while heating (WARTHA), 1881, A., 479.  
 changes which, undergoes when kept (BERTHELOT), 1879, A., 763.  
 adulteration of (VOGEL), 1877, ii., 372; (V. LEPEL), 1878, A., 168; 1879, A., 82; 1880, A., 191.  
 the optically active substances besides glucose which exist in, and are characteristic of it (BÉCHAMP), 1875, 748.  
 acids of (GRÄGER), 1873, 659, 957; (DUCLAUX), 1874, 725; 1875, 188; (MAUMENÉ), 1877, i., 456; (BRUNNER), 1877, ii., 883.  
 alkaline earths in (KAYSER), 1882, A., 121.  
 presence of ethylic alcohol in (TOLLENS), 1877, i., 270.  
 presence of a glycol in (HENNINGER), 1882, A., 1249.  
 gummy matters in (CHANCEL), 1876, i., 117.  
 amount of sulphuric acid in (NESSLER), 1878, A., 347; 1882, A., 1320; (LUNGE), 1879, A., 762.  
 extraction of tannin from (MACH), 1879, A., 1078.  
 tartar and tartaric acid in (BUCHNER), 1878, A., 822; (MACH), 1880, A., 774; (NESSLER and WACHTER), 1880, A., 775.  
 coloured, possibility of magenta disappearing from (NESSLER), 1882, A., 347.  
 composition of an ancient (BERTHELOT), 1877, ii., 953.  
 composition of various (REICHARDT), 1878, A., 93.  
 from Jacques grapes, composition of (BOUSSINGAULT), 1882, A., 1145.  
 from unripe grapes (MUSCULUS and AMTHOR), 1882, A., 1235.  
 from lees (ERKMANN), 1874, 724.  
 from marc, composition of (GIRARD), 1882, A., 1335.  
 apple (MADER), 1879, A., 1078.  
 beetroot (LEFORT), 1882, A., 1336.  
 Bohemian, composition of (HANAMANN), 1877, ii., 953.  
 cloudberry and cranberry (ČECH), 1881, A., 331.  
 French, composition of (HOUDART), 1878, A., 534.  
 Italian, in the Vienna exhibition (SESTINI and DEL TORRE), 1875, 791.  
 fermentation of (NESSLER), 1881, A., 1090.  
 pear (MADER), 1879, A., 1078.  
 raisin (REBOUL), 1881, A., 198.
- Wine, Rhine, bouquet of (v. BABO), 1882, A., 122.  
 ropy, action of cold on (ANON.), 1881, A., 951.  
 Russian fruit and blackberry (ČECH), 1881, A., 209.  
 Tokay, composition of (ANON.), 1880, A., 833.  
 white, from Erfurt, composition of (HADELICH), 1882, A., 121.  
 Virginian native, composition of (COOPER), 1876, i., 813.  
 unfermented and other, composition of (BELL), 1882, A., 81.  
 influence of, on digestion (FLEISCHER), 1881, A., 752.  
 physiological influence of adulterated (SCHMITZ), 1880, A., 174.
- Wine analysis:—  
 valuation of (PETIT), 1880, A., 421.  
 analysis (SCHEITZ), 1875, 385; (REICHARDT), 1878, A., 93; (BUCHNER), 1878, A., 345; (ULBRICHT), 1880, A., 586; 1881, A., 1182; 1882, A., 1000; (WARTHA), 1880, A., 680; (MORITZ), 1881, A., 1090; (BELL), 1882, A., 81; (ANON.), 1882, A., 557; (NESSLER and BARTH), 1882, A., 999, 1235; (JEAN), 1882, A., 1137.  
 application of the direct combination of chromic acid with wool and silk to (JACQUEMIN), 1874, 1192.  
 detection of natural colouring matters in (GRASSI), 1874, 716; 1875, 484; (DUCLAUX), 1874, 725; (DUPRÉ), 1877, i., 234; ii., 227; (GRIESSMAYER), 1877, ii., 368; (REICHARDT; CALMBERG), 1878, A., 93; (GAUTIER), 1878, A., 987; (ERDMANN), 1879, A., 171.  
 detection of artificial colouring matters in (MELLAS), 1876, i., 117; (VOGEL), 1876, i., 740; (GAUTIER), 1876, ii., 330, 428; 1877, ii., 368, 935; 1878, A., 904; (JACQUEMIN), 1876, ii., 446, 667; (HUSSON), 1876, ii., 667; (LAMATTINA), 1876, ii., 668; (BOUILHON), 1877, i., 234; (DUPRÉ), 1877, i., 234; ii., 227; 1880, T., 572; (FORBOS), 1877, i., 750; (HILGER), 1877, i., 751; ii., 938; (GRIESSMAYER), 1877, ii., 368; (CHANCEL), 1877, ii., 371; (COTTON), 1877, ii., 521; (LIEBERMANN), 1877, ii., 939; (V. LEPEL), 1878, A., 168; 1880, A., 191; (NESSLER), 1880, A., 191; (WARTHA), 1880, A.,

680; (ANDRÉE), 1880, A., 927; (KÖNIG), 1881, A., 314; (MACAGNO), 1881, A., 659, 852; (ANON.), 1882, A., 557; (HAAS), 1882, A., 1006; (PASTROVICH), 1882, A., 1138.

#### Wine analysis:—

detection of glycerol in (REICHARDT), 1877, ii., 939.

detection of, sophisticated with grape-sugar (NEUBAUER), 1877, ii., 939; 1879, A., 82.

detection of logwood in (GAUTIER), 1877, ii., 935; (PIZZI), 1881, A., 761.

new method of detecting plaster in (BRETET), 1876, i., 117.

detection of salicylic acid in (ROBINET), 1878, A., 247; (WEIGERT), 1880, A., 352.

detection of sulphuric acid in (NESSLER), 1878, A., 347; 1879, A., 981; (CASALI), 1881, A., 314.

detection of sulphurous acid in (WARTHA), 1880, A., 680; 1882, A., 1231; (LIEBERMANN), 1882, A., 994.

detection of free tartaric acid in (NESSLER), 1879, A., 981; (NESSLER and BARTH), 1882, A., 1000.

estimation of acetic acid in (ANON.), 1873, 92; (WEIGERT), 1879, A., 980.

estimation of alcohol in (SALLERON), 1874, 817; (HAGER), 1879, A., 179.

estimation of the alcoholic value of (DUCLAUX), 1874, 817.

estimation of alum and gypsum in (LOUVET), 1882, A., 96.

estimation of astringent substances in (GIRARD), 1882, A., 1327.

estimation of the extractive matter of (MAGNIER DE LA SOURCE), 1877, i., 752; (HOUDART), 1877, ii., 939; (HAGER), 1879, A., 179; (NESSLER), 1880, A., 515; (GRETE), 1880, A., 928; (DE SAINT-MARTIN), 1881, A., 1086; (MAUMENÉ), 1882, A., 557; (NESSLER and BARTH), 1882, A., 999, 1235.

estimation of glycerol in (REICHARDT), 1878, A., 93; (NEUBAUER and BORGMANN), 1879, A., 404; (REYNAUD), 1880, A., 512; (BORGMANN), 1882, A., 1235.

estimation of glucose in (MACAGNO), 1875, 484.

estimation of sucrose in (ULBRICHT), 1881, A., 1182; 1882, A., 1000.

#### Wine analysis:—

estimation of sugars in, by means of the polariscope (NETTBAUER), 1876, ii., 666; 1877, ii., 521, 939; 1879, A., 82; (NESSLER and BARTH), 1882, A., 999.

estimation of gum in (REBOUL), 1881, A., 199.

estimation of œnocyanin in (GRASSI), 1874, 716; 1875, 484; (JEAN), 1882, A., 430, 1137.

estimation of œnogallic acid in (JEAN), 1882, A., 780.

estimation of œnotannin in (GAUTIER), 1877, ii., 897; (JEAN), 1882, A., 430, 1137.

estimation of plaster in (HOUDART), 1882, A., 425.

estimation of potash in (KAYSER), 1882, A., 336.

estimation of quinine in (BLYTH), 1881, A., 1176.

estimation of sulphurous acid in (HAAS), 1882, A., 773.

estimation of tannic acid in (CARPENÉ), 1875, 1054.

estimation of tannin in (PAVESI and ROTONDI), 1875, 178.

estimation of tartaric acid and of potassium tartrate in (AMTHOR), 1882, A., 1236.

estimation of water in (GAUTIER), 1877, i., 750.

Wine casks, treatment of (NESSLER), 1882, A., 434.

new, seasoning of (v. BIBRA), 1878, A., 454.

Wine lees of different countries, composition of (WARINGTON), 1875, 957.

wine from (ERKMANN), 1874, 724.

utilisation of (MULLER), 1877, ii., 952.

complete analysis of (WARINGTON), 1875, 957.

estimation of tartaric acid in (GROSJEAN), 1879, T., 341; (CARLES), 1882, A., 1329.

Wine must, composition of, at different stages of ripeness of the grape (ANON.), 1876, ii., 812; (ROTONDI and GALIMBERTI), 1880, A., 425.

action of various manures on the composition of (ROTONDI and GALIMBERTI), 1880, A., 507.

fermentation of (GRASSI), 1875, 792; (BLANKENHORN and DAHLEN), 1879, A., 993.

experiments to demonstrate the conversion of sugar when added to fermenting (BOUSSINGAULT), 1877, i., 358.



- Wine must**, aëration of (BLANKENHORN), 1879, A., 492; (ROTONDI), 1880, A., 931.  
 treatment of, in the press house (SEUCKER), 1881, A., 331.  
 influence of varying pressures on (WEIGELT) 1880, A., 358.  
 clarification of (v. KOETH), 1882, A., 347; (JEAN), 1882, A., 1145.  
 concentration of, by cold (NEUBAUER), 1877, ii., 793.  
 unfermented, condensation of, in a vacuum (SUCHY), 1882, A., 672.  
 addition of gypsum to (MACAGNO), 1875, 198.  
 tartar and tartaric acid in (MACH), 1880, A., 774.  
 preservation of, by means of salicylic acid (BERSCH), 1882, A., 1010.  
 analysis of (ULBRICHT), 1880, A., 586; 1881, A., 1182; 1882, A., 1000; (MORITZ), 1881, A., 1090.  
 estimation of glucose in (MACAGNO), 1875, 484.  
 estimation of tannin in (PAVESI and ROTONDI), 1875, 178.
- Wine, oil of** (HARTWIG), 1879, A., 615; 1881, A., 794.
- Wine yeast**, experiments showing that, is not formed in the grape (PASTEUR), 1873, 82.
- Winkworthite** (KENNGOTT), 1873, 150.
- Wintergreen oil**, testing of (ANON.), 1877, ii., 227.
- Witherite**, artificial production of (MIRON and BRUNEAU), 1882, A., 1270.  
 See also Barium carbonate.
- Wocheimite**, composition of (SIEMENS), 1873, 673.
- Wolframite** (*wolfram*) (CARNOT), 1875, 45; (LIVERSIDGE), 1881, A., 995.  
 composition of (JEAN), 1876, i., 47.  
 from the trachyte of Felsőbánya (KRENNER), 1875, 1244.
- Wollastonite**, from Santorin lava (FOUQUÉ), 1875, 624.  
 action of sodium hydroxide and carbonate on (FLIGHT), 1882, T., 159.  
 formation of apophyllite from (STRENG), 1875, 744.
- Wolynite** (v. MUSCHKETTOFF), 1873, 1211.
- Wood**, composition of (THOMSEN), 1879, A., 613.  
 composition of gases contained in the cells of (BÖHM), 1878, A., 802.  
 hardness and resistance of (NOERDLINGER), 1881, A., 132.  
 heat conductivity of (LESS), 1878, A., 693.
- Wood**, carbonisation of, in closed vessels (v. REICHENBACH), 1874, 1119.  
 dry distillation of (FISCHER), 1881, A., 332.  
 products of the distillation of, at low temperatures (HILL), 1877, ii., 746; 1882, A., 296.  
 occurrence of allylic alcohol in the products of distillation of (ARONHEIM), 1875, 246.  
 production of furfural by the action of superheated steam on (MÜLLER; WILLIAMS), 1873, 162.  
 preservation of (ANON.), 1873, 1072; 1874, 728; 1882, A., 431; (BOUCHERIE), 1874, 728, 1189; (HATZFELD), 1874, 728; (MOORE), 1875, 792; (KRUG), 1877, ii., 244.  
 treated with cupric sulphate, decay of (PAULET), 1875, 491.  
 destructive action of, on salicylic acid (KOLBE), 1880, A., 520; 1881, A., 212.  
 staining for (ANON.), 1873, 423.  
 black staining for (LAUBER), 1875, 1064.  
 walnut colour for light (VIEDT), 1876, i., 823.  
 manufacture of paper from (ANON.), 1873, 308; (KEEGAN), 1873, 1069; (ROSENHAIN), 1876, ii., 234.  
 ground, as horse litter (ANON.), 1881, A., 1077.  
 of Acrogens (HAWES), 1874, 1000.  
 of differently manured vines, ash of (NESSLER), 1873, 1253.  
 petrified (CHEVREUL), 1876, i., 534.  
 of Lough Neagh (HODGES), 1875, 48.  
 red colour reaction of (KIELMEYER), 1878, A., 626.
- Wood cellulose**. See Lignose under Carbohydrates.
- Wood gum**. See Xylan.
- Wood naphtha** (*wood spirit*) (KRAEMER and GRODZKI), 1875, 1171; 1877, ii., 291.  
 assay of, for the preparation of methylated spirit (BARDY), 1881, A., 942, 1174.  
 presence of ethylic alcohol in crude (v. HEMILIAN), 1875, 1004.  
 detection of ethylic alcohol in presence of (RICHE and BARDY), 1876, ii., 327.  
 estimation of ethylic alcohol in (RICHE and BARDY), 1875, 1292.  
 estimation of methylic alcohol in (KRELL), 1874, 291; (FISCHER), 1875, 1053; (BARDY and BORDET), 1879, A., 487.  
 See also Methylic alcohol.

**Wood oil.** See Gurjun balsam.

**Wood oils** from wood tar (THERIUS), 1878, A., 664.

**Wood's metal.** See Alloy of lead, tin, cadmium and bismuth.

**Wood tar**, constituents of (TIEMANN and KOPPE), 1882, A., 50.  
decomposition of, at a red heat (ATTERBERG), 1878, A., 862.  
See also Creosote.

**Woody tissues**, composition of (SINGER), 1882, A., 1122.

**Wool**, relation of, to body weight in merino sheep (V. MITSCHKE-COLLANDE), 1881, A., 1054.  
preparation of, before carding (WHITAKER and ASHWORTH), 1874, 1193.  
composition of (SCHÜTZENBERGER), 1878, A., 592.  
heat conductivity of (SCHUHMEISTER), 1878, A., 831.  
chemical purification of (DUCLAUX, LECHARTIER, and RAULIN), 1875, 200.  
freeing of, from fats by carbon disulphide (ANON.), 1873, 658.  
utilisation of the residues obtained in removing the fat from, by Chaudet's process (ANON.), 1873, 1273.  
destruction of the vegetable matters mixed with (BARRAL and SALVÉ-TAT), 1876, i., 821.  
carbonising of (ANON.), 1875, 492.  
and cloth, behaviour of vegetable and animal fibre during the carbonisation of (WIESNER), 1876, ii., 563.  
bleaching of (ANON.), 1874, 400.  
products of the oxidation of (WANKLYN and COOPER), 1880, A., 460.  
direct combination of, with chromic acid (JACQUEMIN), 1874, 1192.  
behaviour of, towards an ammoniacal solution of magenta (BÖTTGER), 1878, A., 184.  
violet dye for (ANON.), 1873, 208.  
use of chrome alum instead of potassium dichromate in dyeing (JOLÉT), 1879, A., 185.  
use of the zinc bath in dyeing (ANON.), 1874, 1192.  
estimation of, in yarn (BAYER), 1877, i., 349.  
separation of silk and, in textile fabric (RÉMONT), 1881, A., 1177.  
See also under Agricultural Chemistry.

**Wool fat**, constitution of (SCHULZE and URICH), 1874, 908, 1079.  
See also Suint.

**Wool waste**, analysis of (HUGHES), 1881, A., 661.

**Wool waste**, oily, spontaneous combustion of (COLEMAN), 1878, A., 258.

**Woollens**, previously coloured with aniline dye, yellow printing on (ANON.), 1873, 1176.  
cochineal-red for (KIELMEYER), 1877, ii., 380.  
water used for dyeing (JARMAN), 1878, A., 625.  
mordanting of, with alum (HAVREZ), 1873, 206.

**Wormseed oil** (FAUST and HOMEYER), 1875, 371.

**Wormwood oil** (WRIGHT), 1874, 1, 317; (BEILSTEIN and KUPFFER), 1874, 153.  
oxidation of, by air (KINGZETT), 1876, i., 243.

**Wort**, effect of artificially manured barley on the composition of (LINTNER, KRANDAUER and TREIBER), 1879, A., 959.  
rotatory power of (KJELDAHL), 1879, A., 993.  
peptones of (GRIESSMAYER), 1877, ii., 521.  
decrease of nitrogen in, during fermentation (GRIMMER), 1881, A., 331.  
reducing power of (STEINER), 1882, A., 1137.  
antiseptic action of salicylic and benzoic acids on (V. MEYER and KOLBE), 1876, i., 101, 959; (HEMPFEL), 1876, i., 711.  
estimation of the extract-contents of (KNAB), 1873, 95, 655.  
Bohemian, composition of, determined by chemico-optical processes (HANAMANN), 1880, A., 189.

**Writing**, restoration of, in old manuscripts (V. BIBRA), 1878, A., 260.

**Wrought iron.** See under Iron.

**Wulfenite** (SILLIMAN), 1874, 344; 1881, A., 1109.  
from Ruby Hill, Eureka Co., Nevada, composition of (ALLEN), 1882, A., 20.  
See also Lead molybdate.

**Wurtzite** (*spiauterite*) (FRENZEL), 1876, i., 50.  
artificial (FÜRSTNER), 1882, A., 281.

## X.

**X of Soret.** See Holmium.

**Xanthamide.** See Ethylic  $\beta$ -thiocarbamate.

**Xanthic acid.** See Ethylic  $\alpha\beta$ -dithiocarbonate.

**Xanthil** (FLEISCHER and HANKÓ), 1878, A., 29.

*o*-Xylene, Me:Me=1:2; *m*-xylene, Me:Me=1:3; *p*-xylene, Me:Me=1:4.

**Xanthine** (SCHÜTZENBERGER), 1878, A., 235.

conversion of, into theobromine and caffeine (FISCHER), 1882, A., 981.  
colour reactions of (ENGEL), 1876, i., 943.

derivatives, formation of, from albumin (KRAUSE and SALOMON), 1879, A., 471.

formation of, by the action of pancreas ferment on albumin (SALOMON), 1878, A., 588.

formation of, in germinating plants (SALOMON), 1882, A., 987.

**Xanthinine** (GRIMAU), 1879, A., 784.

**Xanthochromium salts.** See under Chromium.

**Xanthocobalt salts.** See under Cobalt.

**Xanthogallol**, preparation of (STENHOUSE), 1874, 586.

action of alkalis on (STENHOUSE), 1875, 4.

**Xantholite** (HEDDLE), 1882, A., 288.

**Xanthone.** See Diphenylene ketone oxide.

**Xanthophyllite** (TSCHERMAK and SIPÖCZ), 1881, A., 233.

**Xanthopurpurin.** See 1:3-Dihydroxy-anthraquinone.

**Xanthoquinic acid** and its salts, and its decomposition by heat (SKRAUP), 1882, A., 223.

See also 3-Hydroxyquinoline-4'-carboxylic acid.

**Xanthorhamnin** (LIEBERMANN and HOERMANN), 1879, A., 39.

formula, and potassium derivative of (LIEBERMANN and HOERMANN), 1879, A., 271.

**Xanthurin** (FLEISCHER and HANKÓ), 1878, A., 29.

**Xenotime** (*yttrium phosphate*), artificial formation of (RADOMINSKI), 1875, 433.

from the Binnenthal (KLEIN), 1875, 873.

**Xenylamine.** See Diphenyl, *p*-amido-.

**Xeronic acid.** See Diethylmaleic acid.

**Xylan** (*wood-gum*) (THOMSEN), 1879, A., 613.

**Xylene**, distillation of (NAUMANN), 1878, A., 47.

action of carbonyl chloride on, in presence of aluminium chloride (ADOR and RILLIET), 1878, A., 498.

action of nitrogen peroxide on (LEEDS), 1881, A., 584.

*o*-Xylene (*dimethylbenzene*) (PICCARD), 1879, A., 655.

*o*-Xylene (*dimethylbenzene*), occurrence of, in coal tar (JACOBSEN), 1877, ii., 600.

from *o*-bromotoluene (JANNASCH and HÜBNER), 1874, 257.

preparation of, from toluene (JACOBSEN), 1882, A., 391.

action of chromyl dichloride on (ETARD), 1881, A., 581.

separation of, from its isomerides (WROBLEWSKI), 1879, A., 919; 1880, A., 240; 1881, A., 433.

*m*-Xylene (PREIS and RAYMAN), 1879, A., 623; 1880, A., 463.

formed by the action of aluminium chloride on methylic chloride and benzene (ADOR and RILLIET), 1879, A., 228, 527.

action of benzylic chloride on (ZINCKE), 1873, 272.

action of chlorosulphonic acid on (BECKURTS and OTTO), 1879, A., 229.

action of chromyl dichloride on (ETARD), 1881, A., 581.

methylation of (JACOBSEN), 1882, A., 391.

oxidation of, to *m*-toluic acid (BRÜCKNER), 1876, ii., 85.

some derivatives of (GUNDELACH), 1876, ii., 513.

5-bromo- (WROBLEWSKI), 1878, A., 978.

$\omega$ -chloro- (GUNDELACH), 1876, ii., 513; (MAZZARA), 1880, A., 161.

4-nitro- (HARMSSEN), 1881, A., 49.

5-nitro-, oxidation of (WROBLEWSKI), 1881, A., 420; 1882, A., 954.

conduct of, towards oxidising agents (REMSEN and KUHARA), 1882, A., 607.

4:6-dinitro- (ROMMIER), 1873, 887.

*p*-Xylene (JANNASCH), 1874, 467; (PREIS and RAYMAN), 1879, A., 623; 1880, A., 463.

formation of, by the action of aluminium chloride on methylic chloride and benzene (ADOR and RILLIET), 1879, A., 228, 527.

preparation of, from coal-tar oil (JACOBSEN), 1877, ii., 600.

action of benzylic chloride on (ZINCKE), 1873, 272.

2:6- and 2:3-dinitro-, crystallisation of (JANNASCH and STÜNKEL), 1881, A., 808.

isomeric dinitro- (ROMMIER), 1873, 887.

trinitro- (SCHIFF), 1880, A., 892.

*iso*Xylene. See *m*-Xylene.

- o*-Xylene, Me:Me=1:2; *m*-xylene, Me:Me=1:3; *p*-xylene, Me:Me=1:4.
- Xylenes**, derivatives of (RADZISZEWSKI and WISPEK), 1882, A., 1283.
- acids formed by the action of, on phthalic anhydride (MEIER), 1882, A., 848.
- $\omega$ -bromo- (*o*-, *m*-, and *p*-xylylic bromides) and  $\omega$ -dibromo- (*o*-, *m*-, and *p*-xylylenic bromides) (RADZISZEWSKI and WISPEK), 1882, A., 1284.
- o*-Xylene dihydride. See Cantharene.
- Xylene tetrahydride** (*tetrahydroxylene*) (RENARD), 1882, A., 64, 1179.
- Xylene hexahydride** (*octonaphthene*). See Hexahydro-*m*-xylene.
- Xyleneazothymolsulphonic acid** (STEBBINS), 1882, A., 834.
- m*-Xylene-*p*-azo-*p*-xyldine (NIETZKI), 1880, A., 552.
- p*-Xylene-2:5-diamine (NIETZKI), 1880, A., 553.
- p*-Xylene- $\omega$ -dicarboxylic acid. See *p*-Phenylenediacetic acid.
- Xylene-phosphonic and -phosphinic acids**, and their salts (MICHAELIS and PANEK), 1880, A., 641; 1882, A., 964.
- Xylenephthalic acids**. See Phenylxylylketonecarboxylic acids.
- p*-Xylenesulphinic acid (JACOBSEN), 1878, A., 411.
- Xylenesulphonamides** (REMSEN), 1878, A., 56.
- constitution of (REMSEN), 1878, A., 56, 505; (ILES and REMSEN), 1878, A., 505.
- oxidation of (ILES and REMSEN), 1877, ii., 776; 1878, A., 412, 505, 724; 1879, A., 52; (JACOBSEN), 1879, A., 53; (REMSEN), 1879, A., 248.
- m*-Xylene-2-sulphonamide (JACOBSEN), 1878, A., 411.
- and 4-bromo- (JACOBSEN and WEINBERG), 1879, A., 62.
- m*-Xylene-4-sulphonamide, 5-bromo- (WEINBERG), 1878, A., 725.
- Xylenesulphonic acids** (JACOBSEN), 1878, A., 410.
- m*-Xylene-2-sulphonic acid, 4:6-dibromo- (JACOBSEN and WEINBERG), 1879, A., 61.
- m*-Xylene-4-sulphonic acid, 5-bromo-, and its salts (WEINBERG), 1878, A., 724.
- 6-nitro-, and its salts (HARMSSEN), 1881, A., 49.
- Xylenesulphonic chlorides** (JACOBSEN), 1878, A., 410.
- o*-4-Xylenol (JACOBSEN), 1878, A., 412; 1879, A., 641.
- tribromo- (JACOBSEN), 1878, A., 412.
- m*-2- and 4-Xylenols (JACOBSEN), 1878, A., 411.
- m*-4-Xylenol, *mono*-, *di*-, and *tri*-bromo- (JACOBSEN), 1878, A., 411.
- and 5-nitro- (LAKO), 1876, ii., 634.
- p*-2-Xylenol (JACOBSEN), 1878, A., 412; (OLIVERI), 1882, A., 837.
- oxidation of the methyl ether of (CANZONERI), 1881, A., 268.
- mono*- and *tri*-bromo- (JACOBSEN), 1878, A., 412.
- $\alpha$ -,  $\beta$ -, and  $\gamma$ -nitro-, and their salts (OLIVERI), 1882, A., 837.
- Xylenols**, melting and boiling points of (TIEMANN), 1879, A., 924.
- p*-Xylenolcarboxylic acid (OLIVERI), 1882, A., 837.
- p*-2-Xylenolsulphonic acid (JACOBSEN), 1878, A., 412.
- Xylic acids**. See Dimethylbenzoic acids.
- $\beta$ -Xylylenic acid. See Methylisophthalic acid.
- Xyldine**, action of, on chloral (WALLACH), 1875, 350.
- action of hydrogen peroxide on (LEEDS), 1882, A., 502.
- cobalt chloride (LIPPMANN and VORTMANN), 1879, A., 461.
- ferrocyanide (EISENBERG), 1881, A., 261.
- o*-3-Xyldine (*o*-amidoxylene) (WROBLEWSKI), 1879, A., 919; 1881, A., 433.
- m*-2- and 4-Xyldines, and their salts (SCHMITZ), 1879, A., 157.
- m*-5-Xyldine (WROBLEWSKI), 1878, A., 54; 1881, A., 433.
- oxidation of (WROBLEWSKI), 1881, A., 420.
- p*-2-Xyldine, and its salts (SCHUMANN), 1879, A., 51.
- p*-Xyldine (*p*-tolylmethylamine; *p*-tolubenzylamine) (PATERNO and SPICA), 1875, 643.
- Xyldines**, isomeric (WROBLEWSKI), 1881, A., 433.
- nitro- (WROBLEWSKI), 1881, A., 420.
- Xyldineponceau** (BLONDEL), 1882, A., 1250.
- m*-4-Xyldinesulphonic acids (JACOBSEN), 1878, A., 411.
- Xylindein** (LIEBERMANN), 1875, 170.
- Xylitone** (PINNER), 1882, A., 942.
- Xylophylin** (SINGER), 1882, A., 1123.
- p*-Xylo-2:5-quinol, and *mono*- and *di*-chloro- (NIETZKI), 1880, A., 553; (CARSTANJEN), 1882, A., 612.
- m*-Xylo-2:5-quinone, 4:6-dibromo- (JACOBSEN), 1879, A., 530.



*o*-Xylene, Me:Me=1:2; *m*-xylene, Me:Me=1:3; *p*-xylene, Me:Me=1:4.

*p*-Xylo-2:5-quinone (*phlorone*) (NIETZ-KI), 1880, A., 553; (CARSTANJEN), 1882, A., 612.

*dibromo*-, and *chloro*- (CARSTANJEN), 1882, A., 612.

**Xylyl**-. See also Phenylidimethyl-.

*m*-Xylyl benzyl ketone (*dimethyldeoxybenzoin*) (SÖLLSCHER), 1882, A., 1292.

**Xylyl ethyl oxides**, *m*- and *p*- (RADZISZEWSKI and WISPEK), 1882, A., 1283.

**Xylylamide**. See 1:3-Dimethyl-4-benzamide.

*iso***Xylylamide**. See 1:4-Dimethyl-2-benzamide.

**Xylylamine**. See Xylidine.

**Xylyleneacetamidine** (*etherylylylglencdiamine*) and **xylyleneacetamidineurethane** (HOBRECKER), 1873, 174.

**Xylylenic bromides**, *o*-, *m*-, and *p*- (*ω-dibromoxylenes*) (RADZISZEWSKI and WISPEK), 1882, A., 1284.

**Xylylic acids**. See Dimethylbenzoic acids.

*m*-Xylylic alcohol (RADZISZEWSKI and WISPEK), 1882, A., 1284.

**Xylylic bromides** (*ω-bromoxylenes*) (RADZISZEWSKI and WISPEK), 1882, A., 1283.

**Xylylic chloride**. See 1:3-Dimethyl-4-benzoic chloride.

## Y.

**Y<sub>α</sub>** and **Y<sub>β</sub>** (MARIGNAC), 1881, A., 73.

**Y<sub>β</sub>**, absorption-spectrum of (SORET), 1881, A., 349.

**Yam tubers**, composition of (V. MOSER), 1877, ii., 795.

**Yarns**, etc., colouring of, blue, without indigo (ANON.), 1876, i., 459.  
estimation of wool in (BAYER), 1877, i., 349.

**Yeast** (ANON.), 1881, A., 928.

pure (TRAUBE), 1876, i., 958; 1877, i., 107.

malt combings a source of (MARQUARDT), 1880, A., 518.

experiments on various kinds of (RIEBE), 1880, A., 833.

microscopic researches on (DURST), 1881, A., 835.

amount of, formed during fermentation (DELBRÜCK), 1880, A., 728.

manufacture of (VAN HEUMEN and VAN HASSELT), 1877, i., 119.

estimation of the value of raw material in the preparation of (HEINZELMANN), 1880, A., 833.

application of potatoes and undried malt in the preparation of (KRIEGER), 1880, A., 200.

**Yeast**, development of, in solutions containing a varying quantity of nitrogen (HAYDUCK), 1882, A., 761.  
influence of acids on the formation and activity of (HAYDUCK), 1882, A., 417.

influence of the potassium sodium salt of tartaric acid on the activity of (HAYDUCK), 1881, A., 1058.

supposed action of hops in increasing the activity of, in bread making (SACC), 1876, i., 811; 1877, i., 240; (PASTEUR), 1877, ii., 352.

chemical composition of (V. NÄGELI), 1878, A., 911.

the inverting constituent of (DONATH), 1875, 1206.

incapable of producing an invertive fermentation (ROUX), 1881, A., 632.

behaviour of, in media free from oxygen (TRAUBE), 1875, 102.

absorption of oxygen by (SCHÜTZENBERGER), 1874, 1005.

action of various salts on (DUMAS), 1873, 81.

action of, on sugar solutions (GUNNING), 1873, 46.

organisms existing in (BROWN), 1873, 975.

improvements in the treatment of (ANON.), 1880, A., 777.

preservation of (ANON.), 1873, 1274; 1879, A., 817; 1882, A., 1146;

(JEVERSON and BOLDT), 1874, 726.

souring of (DELBÜCK), 1880, A., 518; 1881, A., 951.

artificial, for molasses distilleries (MARKL), 1879, A., 1078.

beer (SCHÜTZENBERGER), 1874, 599; 1878, A., 234; (SCHÜTZENBERGER and DESTREM), 1879, A., 476.

physiological theory of alcoholic fermentation by (BÉCHAMP), 1873, 405.

pure, cultivation of (BERSCH), 1879, A., 1046.

composition of (SCHÜTZENBERGER and DESTREM), 1879, A., 477.

physiological exhaustion of (BÉCHAMP), 1874, 599.

lecithin and nuclein in (HOPPESEYLER), 1879, A., 811; (LOEW), 1880, A., 816.

pressed, rye as a material for (DELBÜCK), 1880, A., 777.

preparation of (DIVIS), 1874, 1027; (ANON.), 1882, A., 1249.

**Yeast**, pressed, preparation of, as a bye-product from potato-spirit (BÉLOHOUBEK), 1879, A., 843.  
 estimation of starch in (HAYDUCK), 1881, A., 943.  
 examination of (GEISSLER), 1881, A., 1183; 1882, A., 113.  
 Munich, various, analysis of (REISCHAUER), 1882, A., 1146.  
 See also Saccharomyces.

**Yeast-germs**, wine-producing, not formed in the grape (PASTEUR), 1873, 82.

**Yerba mansa** (*Anemopsis californica*), constituents of (LLOYD), 1880, A., 721.

"**Yeso**," composition of (WARINGTON), 1875, 952.

**Yew tree** (*Taxus baccata*), taxine, a poisonous alkaloid present in the leaves and seeds of the (MARMÉ), 1877, i., 476; (AMATO and CAPPARELLI), 1880, A., 899.

**Ylang-ylang oil**, oxidation of, by air (KINGZETT), 1876, i., 243.

See also Cananga oil.

**Youngite** (HANNAY), 1878, A., 16.

**Ytterbium**, a new metal from gadolinite (MARNAG), 1879, A., 118; 1880, A., 73.

atomic weight and characteristic salts of (NILSON), 1880, A., 703.

spectrum of (LECOQ DE BOISBAUDRAN), 1879, A., 861.

oxide (*ytterbia*) (NILSON), 1879, A., 601; 1880, A., 704; (CLEVE), 1879, A., 602.

**Yttrium** (HUMPIDGE and BURNEY), 1879, T., 111.

atomic weight of (CLEVE and HÖGLUND), 1873, 137.

combinations of (CLEVE and HÖGLUND), 1873, 136.

salt obtained from rhabdophane, spectrum of (HARTLEY), 1882, T., 215.

chlorostannate (CLEVE), 1879, A., 601.

oxide, heat produced by neutralisation of (THOMSEN), 1874, 430.

**Yttrium group**, absorption-spectra of some metals of (SORET), 1878, A., 629; 1880, A., 7; 1881, A., 349.

**Yttrium organic salts** (CLEVE and HÖGLUND), 1873, 138.

**Yttrogummite** (V. NORDENSKIÖLD), 1879, A., 365.

**Yttrotantalite** (SHEPARD), 1881, A., 382.

## Z.

**Zanzaloin**, and its bromo- and chloro-derivatives (TILDEN), 1875, 1270.

**Zeolites**, occurrence of, in the basalt of the Limperichkopf at Asbach (WEISS), 1873, 1116.

of Puy-de-Dôme (GONNARD), 1877, ii., 283.

simultaneous formation of, under the influence of hot springs, in the neighbourhood of Oran, Algeria (DAUBRÉE), 1877, i., 444.

**Zeolitic minerals**, accidental colouring of (WEBSKY), 1878, A., 711.

**Zeunerite** (WEISBACH), 1873, 150, 1109; (WINKLER), 1873, 606.

from Joachimsthal (LAUBE), 1873, 1010.

**Zigueline** and malachite, contemporaneous formation of, on some old Roman coins (BALLAND), 1876, i., 349.

**Zinalin** (MÜLLER-JACOBS), 1878, A., 140.

**Zinc**, presence of, in animals and plants (LECHARTIER and BELLAMY), 1877, ii., 504.

existence of, in all primary rocks, and in sea waters of all ages (DIEULAFAIT), 1880, A., 708.

production of, in the blast-furnace by a continuous process (KÖHLER), 1878, A., 618.

condensation of vapours of, in the blast-furnace (LENCAUCHEZ), 1878, A., 759.

extraction of, from its solution by aid of the electric current (ANON.), 1882, A., 431.

loss of, in roasting zinc blende (HASENCLEVER), 1876, i., 129.

crystals (SHARPLES), 1874, 961.

influence of heat on the molecular structure of (KALISCHER), 1882, A., 792.

molecular properties of (RAMMELSBURG), 1881, A., 685.

equivalent of (PHIPSON), 1882, A., 697.

thermoelectric force of (HERMANN), 1877, ii., 271.

thermochemical researches on (THOMSEN), 1876, i., 672.

combustion of (GRAMP), 1878, A., 110.

boiling-point of (VIOLE), 1880, A., 697; (TROOST), 1880, A., 1028.

distillation of (FISCHER), 1881, A., 325.

- Zinc**, blue colour of retorts employed in the distillation of (DEGENHARDT), 1876, ii., 47.  
 coating of iron with (ANON.), 1874, 719; (THUM), 1876, i., 793; (JONES, SHEPARD and SEAMAN), 1882, A., 119.  
 tinning of (HESZ), 1880, A., 425.  
 influence of metallic deposits on, in presence of acids and alkalis (GOURDON), 1873, 1203.  
 impurities in (GLADSTONE and TRIBE), 1873, 969.  
 magnesium and aluminium in (WITTSTEIN), 1877, ii., 707.  
 action of, on solutions of cobalt (LECOQ DE BOISEAUDRAN), 1876, ii., 551.  
 action of, on nitric acid (ARMSTRONG and ACWORTH), 1877, ii., 73.  
 action of nitric acid on, in presence of ammonium nitrate (ACWORTH), 1875, 839.  
 action of, on isopropyl iodide (GLADSTONE and TRIBE), 1873, 965.  
 action of sulphuric acid on (MUIR and ROBBS), 1882, A., 693.  
 action of water on (ROCQUES), 1880, A., 766.  
 action of water, and of saline solutions on (SNIJDERS), 1878, A., 838; 1879, A., 11.  
 behaviour of, as reducing agent with acidified solutions of ferric salts (THORPE), 1882, T., 287.  
 combinations of, with phosphorus (RENAULT), 1873, 728.  
 for analytical use (BOHANNON), 1877, i., 345.  
 action of, on blood-solution (v. STRUVE), 1874, 174.  
 in the animal body after hypodermic injection, distribution of (MATZKEWITSCH), 1878, A., 593.  
 poisoning by (SOKOLOFF), 1878, A., 92.  
**Zinc alloy**, Japanese (KALISCHER), 1875, 922.  
 with iridium, rhodium and ruthenium (DEBRAY), 1880, A., 707.  
**Zinc compounds**, improvements in the manufacture of (CLAUS), 1879, A., 423.  
**Zinc arsenate** (SALKOWSKI), 1880, A., 216; (DEMEL), 1879, A., 884; 1880, A., 217.  
 See also Adamite.  
 and copper, crystallised arsenates and phosphates of (FRIEDEL and SARASIN), 1877, i., 690.
- Zinc arsenides** (DESCAMPS), 1878, A., 706.  
 carbonate. See Calamine.  
 chloride, vapour-density of (V. and C. MEYER), 1879, A., 1014.  
 action of, on absinthol and citronellal (WRIGHT), 1874, 319.  
 action of aluminium on (FLAWITZKY), 1873, 848.  
 action of, on codeine (WRIGHT), 1874, 107.  
 chlorides, ammoniacal, and their heats of formation (ANDRÉ), 1882, A., 1165.  
 magnesium chloride (WARNER), 1874, 24.  
 fluoride (CLARKE), 1877, ii., 839.  
 fluoxyvanadate (BAKER), 1878, T., 394.  
 hydride (LEEDS), 1877, i., 282.  
 hydroxide, action of carbon disulphide on (WALKER), 1874, 1135.  
 permanganate, crystallised (BIEL), 1874, 1101, 1138.  
 oxide, red, of New Jersey (HAYES), 1873, 605.  
 characteristics of (BRÜGELMANN), 1880, A., 701.  
 crystalline (BRÜGELMANN), 1878, A., 771.  
 in alkaline solutions (PRESCOTT), 1880, A., 852.  
 testing of, for carbonic acid (CALMBERG), 1874, 100, 711.  
 ammonium, potassium and sodium oxides (PRESCOTT), 1880, A., 852.  
 phosphates (DEMEL), 1879, A., 1016.  
 phosphides (HAGER), 1877, ii., 113; (EMMERLING), 1879, A., 508.  
 hypophosphite (RAMMELSBERG), 1873, 9.  
 silicate, pseudomorphs of spathic iron after (MÜLLER), 1876, i., 530.  
 See also Willemite.  
 sulphate, purification of (ŠTOLBA), 1877, ii., 113.  
 removal of iron from (PRUNIER), 1882, A., 1265.  
 anhydrous and hydrated, specific gravity of (THORPE and WATTS), 1880, T., 108.  
 electric conductivity of solutions of (v. BEETZ), 1879, A., 864.  
 thermoelectric force of solutions of (HERMANN), 1877, ii., 271.  
 action of hydrogen sulphide on solutions of (BAUBIGNY), 1882, A., 805.  
 adulteration of cochineal by (DURRWELL), 1876, i., 988.

**Zinc sulphate.** See also Goslarite.  
copper and magnesium double sulphates, examination of, by the time method (HANNAY), 1879, T., 457.  
sulphhydrate (THOMSEN), 1879, A., 206.  
sulphide, crystallization of (HAUTE-FEUILLE), 1882, A., 363.

See also Blende.

potassium and sodium sulphides (SCHNEIDER), 1874, 228.

thiocarbonate, estimation of carbon disulphide in (FINOT and BERTRAND), 1877, i., 744.

thiochromite (GRÖGER), 1881, A., 226; 1882, A., 15.

**Zinc organic compounds, action of, on the chlorides of acid radicles** (PAWLOFF), 1877, ii., 310, 732.

butylide (CAHOIRS), 1874, 349.

and nicotine, double chloride of, distillation of, with soda-lime (LAIBLIN), 1879, A., 809.

cyanide (JOANNIS), 1882, A., 484.

decomposition of, in carbonic acid, air, and pure hydrogen (NAUDIN and DE MONTHOLON), 1877, i., 66.

gold cyanides (LINDBOM), 1878, A., 131.

thallium cyanide (FRONMÜLLER), 1878, A., 394.

ethyl, preparation of, by the copper-zinc couple (GLADSTONE and TRIBE), 1879, T., 571.

action of, on acetaldehyde (WAGNER), 1876, ii., 395.

action of  $\omega$ -bromacetophenone on (ANITOFF; SCHDANOFF), 1873, 48.

action of ethylenic oxychloride on (KESSEL), 1875, 554.

action of, on silicone methyl ether (LADENBURG), 1873, 488.

action of sulphur dioxide on (ZUCKSCHWEDT), 1874, 674.

mereaptide (CLAËSSON), 1877, ii., 295.

methiodide (GLADSTONE and TRIBE), 1879, T., 108.

methyl, preparation of (GLADSTONE and TRIBE), 1879, T., 107.

action of, on  $\omega$ -bromacetophenone (ANITOFF; SCHDANOFF), 1873, 48; (BUTLEROFF), 1877, ii., 588.

action of, on the bromides of brominated acid radicles of the  $\alpha$ -series (KASCHIRSKY), 1879, A., 46; 1882, A., 36.

propyl (CAHOIRS), 1873, 366.

ammonium thiocyanate (FLEISCHER), 1876, i., 910.

**Zinc ores from the new Helene Mine at Scharley, near Beuthen, Silesia** (LINDNER), 1878, A., 475.

assay of (MASCIZZINI and PARODI), 1877, ii., 221.

complex, metallurgic treatment of (PARNELL), 1881, A., 668.

**Zinc-spinel from Brazil** (DAMOUR), 1881, A., 696.

conversion of the distillation-vessels of zinc-furnaces into, and tridymite (SCHULZE and STELZNER), 1881, A., 520.

fayalite slags containing (STELZNER), 1882, A., 476.

**Zinc, detection, estimation and separation:—**

analyses of crude (GÜNTHER), 1882, A., 553, 776.

precipitation of, by hydrogen sulphide in presence of potassium hydrogen sulphate (SEELHORST), 1876, ii., 554.

precipitation of, by water (DAVIES), 1875, 131.

detection of, in toxicological cases (RAOULT and BRETON), 1877, ii., 928; (ORTO), 1881, A., 194.

estimation of (FAHLBERG), 1875, 665; (LYTE), 1875, 915; (THUM), 1877, ii., 221; (RICHE), 1877, ii., 924;

1878, A., 750; (BEILSTEIN and JAWEIN), 1879, A., 672; 1880, A., 826; 1882, A., 98; (MANN), 1879, A., 1054; (ALEXANDROWICZ), 1880, A., 748; (MAHON), 1882, A., 775.

estimation, electrolytic, of (REINHARDT and IHLE), 1881, A., 1170.

estimation of, by means of a stream of hydrogen (BURSTYN), 1873, 192.

estimation of, as oxalate (CLASSEN), 1877, ii., 924; 1879, A., 1054.

estimation of, in minerals, by electrolysis (PARODI and MASCIZZINI), 1877, ii., 804.

estimation of, in its ores (ANON.), 1882, A., 338.

estimation of available, in zinc-dust (FRESENIUS), 1879, A., 400.

separation of, from alumina and ferrie oxide (CLASSEN), 1879, A., 970, 1055.

separation of, from cadmium (KUPFFERSCHLÄGER), 1881, A., 849; 1882, A., 97.

separation of, from cadmium and copper (HUTCHINSON), 1880, A., 748.

separation of, from copper, by precipitation by sulphuretted hydrogen (LARSEN), 1881, A., 467.



**Zinc, separation:—**

- separation of, from manganese (CLASSEN), 1879, A., 1055.
- separation of, from nickel (FRESSENIUS), 1873, 1261; 1874, 1180; (BEILSTEIN), 1879, A., 276.
- separation of, from nickel and cobalt (FRESSENIUS), 1873, 1261; 1874, 1180.
- separation of iron from manganese, nickel, cobalt and (CLASSEN), 1877, ii., 924; (CLASSEN and v. REIS), 1881, A., 1081.

**Zinc-bath**, use of the, in dyeing wool (ANON.), 1874, 1192.

**Zinc blende**. See *Blende*.

**Zinc brass, carbon, palladium and platinum couples** (GLADSTONE and TRIBE), 1879, T., 575.

**Zinc caps**, so-called, for bottles, flasks, etc. (WITTSTEIN), 1873, 1172.

**Zinc copper couple**. See *Copper zinc couple*.

**Zinc-dust** (THUM), 1878, A., 837.  
agglomeration and melting of (LENCACHEZ), 1878, A., 760.

action of, on the chlorides of sulpho-*p*-bromobenzoic acid (BÖTTINGER), 1877, i., 468.

sulphur in (WAGNER), 1882, A., 670.

valuation of (BEILSTEIN and JAWEIN), 1880, A., 826.

estimation of the available zinc in (FRESSENIUS), 1879, A., 400.

**Zinckenite**, composition of (HILGER), 1877, ii., 853.

**Zinc powder**, estimation of the value of (BARNES), 1881, T., 462.

**Zingiber officinale**. See *Ginger*.

**Zinnwaldite** (TSCHERMAK), 1878, A., 712; 1880, A., 533; (BAUMHAUER), 1881, A., 692.

**Zircon** (VOM RATH), 1881, A., 550.

**Zircon**, distribution of, in rocks (TÖRNEBOHM), 1877, ii., 577.

from Colorado (KÖNIG), 1877, ii., 720; 1878, A., 389.

from the granite-veins of Elba (CORSI), 1882, A., 480.

from the Isergebirge (JANOVSKY), 1880, A., 369.

from Tuscany (CORSI), 1882, A., 479.

spectra and composition of (HANNAY), 1873, 705.

colour of (SPEZIA), 1877, ii., 856.

twin crystals of (MEYER), 1879, A., 363.

**Zirconia**. See *Zirconium dioxide*.

**Zirconic acid and zirconates**. See under *Zirconium*.

**Zirconic anhydride**. See *Zirconium dioxide*.

**Zirconium**, specific heat of (MIXTER and DANA), 1874, 118.

compounds (PAIKULL), 1873, 1105; 1880, A., 6; (HORNBERGER), 1876, ii., 275.

salts, soluble basic (ENDEMANN), 1875, 1162.

ammonium fluoride, isomorphism of, with potassium fluoroxovanadate (BAKER), 1879, T., 762.

dioxide (*zirconia*; *zirconic anhydride*) (HANNAY), 1873, 703.

**Zöblitzite** (FRENZEL), 1876, i., 51.

**Zoisite** (KÖNIG), 1879, A., 606; (TSCHERMAK and SIPÓCZ), 1881, A., 1003.

**Zonochlorite** (HAWES), 1876, i., 193.

**Zorgite**, a selenium mineral from the Argentine Republic (BILLAUDOT), 1882, A., 1269.

**Zundererz** or tinder-ore of Clausthal (RÖSING), 1881, A., 24.

**Zymases** (BIROT), 1875, 374; (BÉCHAMP), 1880, A., 816.

# AGRICULTURAL CHEMISTRY.

## ANIMALS, DAIRY PRODUCTS, AND FEEDING EXPERIMENTS.

- ANIMALS, differences of chemical structure and of digestion amongst (HOPPE-SEYLER), 1877, ii., 202.  
 existence of bacteria or their germs in the healthy organs of (NENCKI and GIACOSA), 1879, A., 1046.  
 formation of glycogen in the bodies of (ABELES; FORSTER), 1877, ii., 204.  
 artificial suspension of glycogenesis in living (LUCHSINGER), 1876, i., 949.  
 influence of light on chemical action in (MOLESCHOTT), 1881, A., 833.  
 presence of zinc in (LECHARTIER and BELLAMY), 1877, ii., 504.  
 influence of arsenic on (GIES), 1880, A., 907.  
 action of mono- and di-phenylarsinic acids on (SCHULZ), 1879, A., 476.  
 action of urea and ammonium salts on (RICHEL and MOUTARD-MARTIN), 1882, A., 760.  
 equivalent substitution of mineral substances in (CHAMPION and PELLET), 1877, i., 98.  
 consumption of water by (HENNEBERG), 1873, 929.  
 feeding of, importance of inorganic salts in the (LUNIN), 1881, A., 1050.  
 fattening of (v. WOLFF), 1880, A., 173.  
 formation of fat in (WEISKE and WILDT), 1874, 994; 1875, 173; (PEREWOZNIKOFF), 1878, A., 238; (SOXHLET), 1882, A., 238; (SCHULZE), 1882, A., 878.  
 situation of the deposit of fat in, on different diets (FORSTER), 1877, ii., 791.  
 fat of, influence of food on the constitution of the (MÜNTZ), 1881, A., 752.
- ANIMALS, assimilation of food by (ANON.), 1874, 384.  
 digestion of cellulose by (HOFMEISTER), 1882, A., 237; (TAPPEINER), 1882, A., 985.  
 effect of feeding on the weight of (KELLNER), 1882, A., 77.  
 composition of the bones of, after varied feeding (WEISKE), 1875, 277.  
 composition of the bones of, fed with food containing varying proportions of lime and phosphoric acid (WEISKE and WILDT), 1874, 489.  
 colouring of the bones of, through madder feeding (WEISKE), 1874, 490.  
 breathing of plants and (JAMIESON), 1880, A., 911.  
 respiration of, influence of carbonic acid on the (RAOULT), 1876, ii., 318.  
 respiration and perspiration of, carbonic acid excreted by the (POTR), 1876, i., 721.  
 elimination of nitrogen by (SEEGEN and NOWAK), 1880, A., 272; 1882, A., 636; (GRUBER), 1881, A., 451; (v. PETTENKOFER and v. VOIT), 1882, A., 238, 747.  
 occurrence of a reducing substance in the urine of (DEHMEL), 1880, A., 332.  
 carnivorous, researches on the bones of (SCHRODT), 1877, i., 328.  
 cold-blooded, influence of temperature on the respiration of (SCHULZ; PFLÜGER), 1877, i., 327.  
 domestic, influence of smoke on the health of (FREYTAG), 1873, 1155.  
 herbivorous, hippuric acid in the urine of (WEISKE), 1877, i., 217; (LOEW), 1879, A., 952; 1880, A., 173.

ANIMALS, marine, sugar-formation in certain (PICARD), 1876, i., 949.  
omnivorous, biliary and pancreatic secretions of (DEFRESNE), 1874, 594.

warm-blooded, production of heat in (FINKLER), 1878, A., 519.

influence of the surrounding temperature on the tissue metamorphosis of (COLASANTI), 1877, i., 327; (v. VOIT), 1879, A., 75; (v. VOIT and THEODOR), 1879, A., 951.

ANIMALS—

**Bees**, activity of (ERLENMEYER and v. PLANTA), 1880, A., 415, 725.

**Cats**, influence of temperature on the excretion of carbonic acid and the absorption of oxygen by (DUKE OF BAVARIA), 1879, A., 74; (v. VOIT), 1879, A., 75.

absorption in the stomach of (TAPPEINER), 1882, A., 748.

intestinal gases of (TAPPEINER), 1882, A., 240.

**Calves**, feeding of, without the cows' milk (WEIN), 1879, A., 1046.

results of fattening, with skim milk (BECKHUSEN), 1881, A., 297.

cacao rind as fodder for (SAMEK), 1880, A., 502.

serum of, amount of disodium orthophosphate in the (MRATSKHOWSKY), 1878, A., 519.

**Cattle**, fattening of (VOELCKER), 1881, A., 116.

composition of the flesh of; its food value and its money value (LEYDER and PYRO), 1876, i., 408.

beet-leaves as food for (KIRCHNER and DU ROI), 1879, A., 813.

cotton cake as food for (SCHRODT and v. PETER), 1882, A., 636.

cotton seed meal as food for (RITTER), 1880, A., 500; (PRESER), 1881, A., 636; (POGGE), 1882, A., 321.

flesh-meal as food for (FEHLAU), 1880, A., 501; (KELLER), 1881, A., 302.

American flesh-meal as food for (SCHRODT and v. PETER), 1881, A., 758.

grass and lucerne as food for (SAMEK), 1882, A., 238.

rice-meal as food for (SCHRODT, DU ROI and v. PETER), 1881, A., 297.

soja beans as food for (BLASCOVICS), 1882, A., 83.

ANIMALS—

**Cattle**, use of sour food for (COTRU), 1879, A., 1050.

consumption of salt by (HEIDEN), 1873, 649.

brittleness of the bones in (NESSLER), 1873, 924, 1244.

phosphoric acid in the urine of (DE LEEUW), 1882, A., 543, 636.

new kind of calculi from (ROSTER), 1873, 398.

formation of phenol, indole and scatole in (TAPPEINER), 1882, A., 240.

**Dogs**, feeding of, with flesh and fat (v. PETTENKOFER and v. VOIT), 1873, 1047.

absorption in the stomach of (TAPPEINER), 1882, A., 748.

new constituent of the urine of (JAFFÉ), 1875, 478.

occurrence of allantoin and hippuric acid in the urine of (SALKOWSKI), 1878, A., 594.

separation of ammonium chloride in the urine of (v. VOIT) 1877, ii., 206; (FEDER), 1878, A., 237, 993; (SALKOWSKI), 1879, A., 830.

behaviour of uric acid absorbed by the intestinal canal of (SALKOWSKI), 1878, A., 525.

conversion of uric acid into urea in the body of (v. VOIT), 1878, A., 444.

**Chicken**, does glycogen exist in the blastoderm of the? (KÜLZ), 1881, A., 629.

**Chicken cholera** (PASTEUR), 1882, A., 324.

**Fowls**, phosphorus poisoning in (FRAENKEL and RÖHMANN), 1882, A., 544.

poisoned with pumpkin-seeds (HILLE), 1879, A., 1046.

excrements of (v. KNIERIEM), 1877, ii., 792; (PETERMANN), 1880, A., 345.

**Geese**, digestion of cellulose by (WEISKE and MEHLIS), 1878, A., 905; (WEISKE), 1880, A., 330.

**Goats**, excretion of phosphoric acid by (BERTRAM), 1879, A., 392.

intestinal gases of (TAPPEINER), 1882, A., 240.

**Guinea-pigs**, albuminoids of the *Vesicula seminalis* in (LANDWEHR), 1882, A., 543.

**Horses**, composition of the flesh of; its food value and its money value (LEYDER and PYRO), 1876 i., 408.

ANIMALS—

**Horses**, digestion in (V. WOLFF), 1878, A., 521; (ELLENBERGER and HOFMEISTER), 1882, A., 1119.  
work and digestion of (KELLNER), 1878, A., 992; (V. WOLFF), 1880, A., 414; 1882, A., 319.  
digestion of two kinds of clover hay by (V. WOLFF), 1882, A., 237.  
digestion of peas by (V. WOLFF), 1882, A., 415.  
feeding of, with flesh-meal (DÜNKELBERG and V. VOIGTS-RHETZ), 1880, A., 57.  
feeding of, with maize (MÜNTZ), 1882, A., 415.  
intestinal gases of (TAPPEINER), 1882, A., 240.  
composition of calculi from (CHITTENDEN), 1876, i., 727; (PETERS; MÜLLER), 1880, A., 174.  
formation of phenol, indole, and scatole in (TAPPEINER), 1882, A., 240.

**Marmots**, urine of (SACC), 1874, 595.

**Pigs**, feeding experiments on (ROBERTS), 1874, 707; (HEIDEN), 1875, 1278; (V. WOLFF), 1880, A., 415, 724.

fattening of (SCHNEIDER), 1882, A., 636.

preparation of food for (MENDEL), 1881, A., 302.

assimilation of different sorts and mixtures of foods by (V. WOLFF), 1877, i., 98.

cockchafers as food for (V. WOLFF), 1874, 384.

meat-flour as food for (HOFMEISTER), 1874, 595.

Australian concentrated mutton-soup as food for (VOELCKER), 1874, 175.

fattening of, with soja bean, and flesh-meal (ANON.), 1881, A., 927.

urine of, guanine in (PECILE), 1877, i., 330.

**Rabbits**, pancreatic juice of (HEIDENHAIN, HENRY and WOLLHEIM), 1877, ii., 204.

starving, consumption of tissue in (RUBNER), 1882, A., 416, 749.

of various ages, composition of bones of (WILDT), 1873, 290.

**Lambs**, effect of artificial addition of phosphates to the food of (HOFMEISTER), 1873, 1153.

duration and composition of the increase in live weight of, when fattening (HENNEBERG, KERN and WATTENBERG), 1881, A., 450.

ANIMALS—

**Sheep**, digestion by (V. WOLFF), 1878, A., 523; 1880, A., 484; 1882, A., 237; (WILDT), 1878, A., 991.

digestion in the different divisions of the digestive canal of (WILCKENS), 1879, A., 391.

assimilation in, of all ages (V. WOLFF), 1873, 519; (WEISKE), 1880, A., 724.

fattening of (HENNEBERG, KERN and WATTENBERG), 1879, A., 811; (ANON.), 1881, A., 834.

feeding experiments with (HEIDEPRIEM), 1873, 519; (SONNTAG, V. SCHÖNBERG and LORENZ), 1879, A., 951.

results with stall-feeding of (SCHNORRENPFEL), 1880, A., 503.

meat-flour as food for (HOFMEISTER), 1876, i., 722.

digestion of peas by (V. WOLFF), 1882, A., 415.

action of arsenic in feeding (WEISKE), 1876, i., 948.

merino, relation of wool to body weight in (V. MITSCHKE-COLLANDE), 1881, A., 1054.

lupine-sickness in (SCHULZ and WILDT), 1880, A., 57; (KROCKER; KÜHN), 1880, A., 916; (ROLOFF), 1882, A., 637.

prevention of lupine-sickness in (KÜHN), 1881, A., 934.

serum of, amount of disodium orthophosphate in (MRATSKOWSKY), 1878, A., 519.

pancreatic juice of (HEIDENHAIN, HENRY and WOLLHEIM), 1877, ii., 204.

intestinal gases of (TAPPEINER), 1882, A., 240.

shearing of, influence of, on the digestion of food and on nitrogen metamorphosis (WEISKE), 1876, i., 948.

influence of, on the yield of milk (WEISKE), 1880, A., 487.

DAIRY PRODUCTS—

**Dairy process**, Alpine (EUGLING and V. KLENZE), 1879, A., 857.

**Dairy**, use of salicylic acid in the (PORTELE), 1881, A., 1185.

**Butter and Butter-fat** from sweet and sour cream (SCHMOEGER), 1882, A., 348.

whole milk butter compared with cream (SCHRODT and DU ROI), 1880, A., 932.



DAIRY PRODUCTS—

- Butter and Butter-fat**, formation of, and its physical and chemical composition (STORCH), 1882, A., 674.  
composition of (JONES), 1877, ii., 519.  
composition of two ancient samples of (WIGNER and CHURCH), 1880, A., 357.  
coefficients of expansion of (WIGNER), 1880, A., 70.  
specific gravity of (BLYTH), 1880, A., 572.  
effect of oxygen on the quality of (ARNOLD), 1881, A., 1184.  
washing of (ROBERT), 1882, A., 348.  
colouring of (ANON.), 1881, A., 953.  
preservation of (BAY), 1880, A., 932.  
salting of (ANON.), 1874, 725.  
emulsion of (CHICHKOFF), 1874, 932.  
butyric acid from (GRÜNZWEIG), 1873, 374.  
adulteration of, in America (ANON.), 1881, A., 953.  
fats used for the adulteration of (HUSON), 1878, A., 249.  
**Butter making**, experiments on (WINKEL), 1880, A., 75.  
theory of (SOXHLET), 1876, ii., 537.  
Ziemann's process for (BERGMANN), 1881, A., 952.  
machines for (EUGLING), 1880, A., 357.  
**Butter analysis** (HOORN), 1873, 1064; (ALLEN), 1876, i., 116; (GATEHOUSE), 1876, i., 764; (BERNBECK), 1876, i., 765; (HAGER and KUNSTMANN), 1876, i., 967; (MUTER), 1877, i., 233; (ESTCOURT), 1877, i., 348; (REICHARDT), 1877, ii., 517; (JONES), 1877, ii., 519; (KRETZSCHMAR), 1878, A., 344; (SACHSSE; HEINTZ), 1878, A., 611; (JEHNS), 1878, A., 685; (PERKINS), 1878, A., 685; 1879, A., 1070; (HAGER), 1879, A., 81; (ANON.), 1879, A., 181; (REICHERT), 1879, A., 406; (DIETZELL and KRESSNER), 1879, A., 407; (KOETTSTORFER), 1879, A., 983, 1069; (WIGNER), 1880, A., 69; (CROOKES), 1880, A., 423; (MEDICUS and SCHERER), 1880, A., 587; (MEISSL), 1880, A., 828; (MEDICUS), 1881, A., 66; (AMBÜHL), 1882, A., 110; (JOHANSON), 1882, A., 559; (TAYLOR), 1882, A., 1003.

DAIRY PRODUCTS—

- Butter analysis**, estimation of the insoluble fatty acids in (KNIGHTS), 1881, A., 201.  
estimation of salicylic acid in (PELLET), 1882, A., 1003.  
**Cheese**, making of (COHN), 1876, ii., 342; (ROBERT), 1882, A., 348.  
general theory of (DUCLAUX), 1882, A., 436.  
new American process for (CHESNEL), 1882, A., 124.  
Ziemann's process for (BERGMANN), 1881, A., 952.  
ripening of (DUCLAUX), 1879, A., 859; 1882, A., 436; (MUSSO), 1881, A., 1184.  
colouring of (ANON.), 1881, A., 953.  
proteids in, transformation of, into fats (BLYTH), 1878, A., 680.  
formation of fat in ripening (KELLNER), 1880, A., 594.  
formation of fat from casein in the ripening of (MUSSO and MENOZZI), 1879, A., 996.  
decomposition of (DUCLAUX), 1879, A., 859.  
of Cantal (DUCLAUX), 1882, A., 441.  
Danish export, examination of (STORCH), 1880, A., 934.  
Parmesan, critical point in making (GALIMBERTI), 1879, A., 764.  
composition and ripening of (MANETTI and MUSSO), 1878, A., 334.  
Roquefort, supposed conversion of albumin into fat in the ripening of (SIEBER), 1880, A., 835.  
analysis of (MÜLLER), 1873, 1266.  
estimation of nitrogen in (MUSSO), 1877, ii., 233, 941.  
**Cream** from de Laval's centrifugal separator, composition of (VOELCKER), 1880, A., 780; 1881, A., 771.  
sweet and sour, butter from (SCHMOEGER), 1882, A., 348.  
Devonshire, composition of (BLYTH), 1879, A., 1068.  
separation of (KIRCHNER), 1880, A., 75; (MAYER; CLAUSNIZER; ENGSTRÖM), 1880, A., 933; (SCHRODT and DU ROI), 1880, A., 934; (STIMMEL), 1881, A., 129; (SCHRODT), 1881, A., 771; 1882, A., 124; (SCHRODT and v. PLOTTH), 1881, A., 857; (FLEISCHMANN and SACHTLEBEN; SALKOWSKI), 1882, A., 674; (FRIEDLÄNDER and SCHMOEGER), 1882, A., 1148; (v. PETER), 1882, A., 1149.

DAIRY PRODUCTS—

**Curds**, formation of (MUSSO and MENOZZI), 1880, A., 900.  
composition of (RUBNER), 1880, A., 931.

**Whey** from Luchon (GARRIGOU), 1876, i., 115.

skimmed, composition of (MANETTI and MUSSO), 1879, A., 856.

a new proteid in (CHICHKOFF), 1880, A., 274.

estimation of nitrogen in (MUSSO), 1877, ii., 233, 941.

**Milk** (CAMERON), 1875, 477; (SELM), 1875, 657; (SCHREINER), 1878, A., 992; (ANON.), 1881, A., 953.

physiological chemistry of (SOXHLET), 1873, 187; (GERBER), 1876, ii., 328.

contribution to the physics of (FLEISCHMANN), 1875, 278.

composition of the colostrum (EUGLING), 1879, A., 815.

chemical composition of (REICHARDT), 1877, ii., 373; (CHICHKOFF), 1880, A., 273.

composition of, in health and disease (BLYTH), 1879, T., 530.

composition and properties of (FLEISCHMANN), 1882, A., 662.

composition of an abnormal sample of new (PATTINSON), 1877, i., 232.

composition of, from the same cow on consecutive days (V. BORRIES), 1881, A., 762.

composition of, from Kiel experimental dairy (SCHRODT), 1882, A., 1149.

composition of, from a large herd of cows (FLEISCHMANN and VIETH), 1880, A., 487.

composition of, from cows of different races (MARCHAND), 1879, A., 749.

quantity and quality of, yielded by different races of cows (FLEISCHMANN and VIETH), 1881, A., 630.

of Tyrolese cows, composition of (PORTELE), 1881, A., 1163.

influence of fodder on the secretion of (FLEISCHMANN and VIETH), 1880, A., 330; (FLEISCHMANN), 1880, A., 907.

influence of fodder on the quantity and quality of (WEISKE, SCHRODT and DEHMEL), 1880, A., 184.

influence of ground-nuts on the production of (KIRCHNER and Du Rot), 1880, A., 487.

DAIRY PRODUCTS—

**Milk**, influence of maize-cakes on the production of (HENGELFELD), 1880, A., 725.

comparison of the influence of field beans and lupines on the production of (KELLNER), 1881, A., 927.

influence of different oil-cakes on the production of (POGGE; THREADWELL), 1882, A., 321.

See also Cattle feeding.

free fatty acids in (ARNOLD), 1882, A., 987.

amount of albumin in (NENCKI), 1876, i., 90; (LIEBERMANN), 1876, ii., 216; (MUSSO and MENOZZI), 1880, A., 900.

relation of alkali-albuminate to casein in (SOXHLET), 1873, 187.

amounts of potassium, sodium, and chlorine contained in, compared with those in other foods (BUNGE), 1875, 471.

isolation of the alkaloids of (BLYTH), 1879, T., 531.

bitter principle in (BLYTH), 1879, T., 533.

new carbohydrate in (RITTHAUSEN), 1877, ii., 519.

change of casein of (MEISSEL), 1882, A., 1147.

amount of fat in (FLEISCHMANN and VIETH), 1880, A., 330, 487.

fat-globules and a new theory of churning (SOXHLET), 1876, ii., 537.

amount of nitrogen in (NENCKI), 1876, i., 90; (LIEBERMANN), 1876, ii., 216.

proportion of nitrogen to phosphoric acid in (STOHMANN), 1873, 518.

nuclein of (LJUBAVIN), 1878, A., 591; 1879, A., 735.

preparation of peptone of (CATILLON), 1881, A., 450.

proteids in (DANILEWSKY and RADENHAUSEN), 1881, A., 449.

transformation of, into fats (BLYTH), 1878, A., 681.

amount of solids in (CAMERON), 1879, A., 490; (SCHULTZE; FRÜHLING and SCHULZ), 1880, A., 352.

sulphuric acid in (MUSSO), 1880, A., 423.

tyrosine anhydride in (LOEW), 1882, A., 1148.

ewes', composition of (VOELCKER), 1882, A., 541.

DAIRY PRODUCTS—

**Milk**, ewes', as influenced by fodder (WEISKE and KENNEPOHL), 1882, A., 1309.  
 influence of shearing on the yield of (WEISKE), 1880, A., 487.  
 goats', composition of (VOELCKER), 1882, A., 541.  
 mares', composition of (CAMERON), 1875, 477; (MUTER), 1877, ii., 520; (SCHRODT), 1879, A., 550.  
 colour of (CAMERON), 1875, 477.  
 dialysis of, by means of sized paper (SCHMIDT), 1876, i., 87.  
 acidity of (MARCHAND), 1881, A., 473.  
 reaction of, with litmus (VOGEL), 1873, 1048; 1874, 278.  
 action of mustard-oil on (SCHWALBE), 1873, 76.  
 effect of pulverised porcelain and of animal charcoal on (HERMANN), 1882, A., 759.  
 action of cold on (TISSERAND), 1876, ii., 111.  
 influence of cold on the curdling of (ANON.), 1877, ii., 206.  
 condensed (TROMMER), 1874, 300, 726; (WEIN), 1880, A., 926.  
 composition of (GERBER), 1881, A., 658.  
 preservation of (KLEBS), 1880, A., 148; (LOEW), 1882, A., 1148.  
 boric acid as a preservative of (HIRSCHBERG), 1873, 100; 1876, i., 413.  
 Scherff's process for preserving (MARTINY), 1882, A., 1016.  
 tissue change on a diet of (CAMERON), 1882, A., 636, 749.  
 occurrence of bacteria in (ANON.), 1879, A., 817.  
 microzymes of, as the cause of its fermentation (BÉCHAMP), 1873, 763, 927.  
 alcoholic fermentation of (MUSSO), 1881, A., 944.  
 coagulation of, by rennet (SCHMIDT), 1877, i., 101; (MAYER), 1881, A., 953; 1882, A., 1149.  
 estimation of matter precipitated from, by rennet (MANETTI and MUSSO), 1877, ii., 940.  
 blue (NEELSON), 1881, A., 1055.  
 blueing of (ANON.), 1881, A., 953.  
 diseased (HEISCH), 1878, A., 684; (WIGNER), 1878, A., 685.  
 lazy (SCHRODT and DU ROI), 1880, A., 934.  
 rosy (SCHMIDT-MÜLHEIM), 1882, A., 1122.

DAIRY PRODUCTS—

**Milk**, is, warmed by passing through the centrifugal machine? (DANGERS), 1882, A., 1016.  
**Milk coolers**, experiments with (ANON.), 1880, A., 834.  
 various, comparison of (WÜST), 1880, A., 357.  
**Milk sampling** (WERKOWITSCH and V. KLENZE), 1880, A., 828; (DU ROI and KIRCHNER), 1880, A., 925.  
**Milking**, notes on (ANON.), 1880, A., 834.  
**Skim-milk** (*separated milk*), composition of, from de Laval's cream separator (VOELCKER), 1880, A., 780; 1881, A., 771.  
 areometric estimation of fat in (SOXHLET), 1882, A., 1138.  
 results of fattening calves with (BECKHUSEN), 1881, A., 297.  
**Milk adulteration and analysis**:—  
**Milk**, adulteration of (ANON.), 1874, 726; (HILGER), 1876, i., 766; ii., 329; (WATSON), 1879, A., 1068; (FISCHER), 1880, A., 423; (OHM), 1880, A., 828.  
 adulteration of, with glycerol (MUTER), 1878, A., 684.  
 enumeration of the fat globules as a test for (BOUCHUT), 1880, A., 191.  
 detection of salicylic acid in (MUTER), 1877, ii., 227.  
 test for starch-powder in (ANON.), 1874, 822; (HAGER), 1879, A., 674.  
 analysis of (OSTER), 1874, 717; (MERKLEN), 1874, 1017; (GERBER), 1875, 1296; 1876, ii., 328; 1881, A., 657; (KLINGER), 1876, i., 763; (RITTHAUSEN), 1877, ii., 519; (BELL), 1877, ii., 941; (ANON.), 1878, A., 167; (CHRISTENN), 1878, A., 248; (LEHMANN), 1878, A., 1014; (ADAM), 1879, A., 80; (JANKE), 1880, A., 514; 1882, A., 661; (V. MOSER and SOXHLET), 1880, A., 520; (OHM; MARCHAND; VOGEL; WERKOWITSCH and V. KLENZE), 1880, A., 828; (DU ROI and KIRCHNER; BEHREND), 1880, A., 925; (DYER), 1881, A., 1176; (V. PETER), 1881, A., 1184; (SCHMOEGER), 1882, A., 109; (FLEISCHMANN), 1882, A., 662.  
 analysis of, by the pioscope (ANON.), 1881, A., 946; (DANGERS), 1882, A., 559.

DAIRY PRODUCTS—

**Milk adulteration and analysis:—**

**Milk**, estimation of the different constituents of (BLYTH), 1879, T., 534.

estimation of casein in (LEHMANN), 1878, A., 95; (BLYTH), 1879, T., 531.

estimation of fat in (STODDART), 1875, 293; (GERBER), 1875, 1296; 1876, ii., 328; 1881, A., 657; (CLEAVER), 1876, i., 116; (LEHMANN), 1878, A., 95; (HERAEUS), 1878, A., 755; (BLYTH), 1879, T., 531; (MÉHU), 1879, A., 675; (SOXHLET), 1879, A., 1068; 1881, A., 656; 1882, A., 1138; (SCHMIDT), 1880, A., 352; (VIETH), 1880, A., 761; (MARCHAND; VOGEL), 1880, A., 828; (HAMLET), 1881, A., 656; (CALDWELL), 1881, A., 657; (SHARPLES), 1881, A., 851; (V. PETER), 1881, A., 1184; (SCHMOEGER), 1882, A., 109, 899; (EGGER), 1882, A., 778.

and milk products, error in the estimation of fat in (MANETTI and MUSSO), 1877, ii., 941.

estimation of lactic acid in (MARCHAND), 1879, A., 749; (MUSSO), 1881, A., 944.

estimation of nitrogen in (MUSSO), 1877, ii., 233, 941.

estimation of salicylic acid in (PORTELE), 1881, A., 1185; (PELLET), 1882, A., 1003.

estimation of sugar in (GSCHIEDLEN), 1878, A., 345.

estimation of water in (GERBER), 1875, 1296; (HERAEUS), 1878, A., 755.

estimation of, in lactoprotein (BLYTH), 1879, T., 532.

**Honey**, composition of (BROWN), 1878, A., 969.

from Ethiopia, composition of (VILLIERS), 1879, A., 450.

adulteration of (ANON.), 1881, A., 316.

detection of adulterated or artificial (V. PLANTA), 1882, A., 1327.

FEEDING EXPERIMENTS—

**Acorns**, value of, as fodder (CZUBATA), 1880, A., 917.

digestibility and nutritive value of (WEISKE, KENNEDY, and SCHULZE), 1880, A., 820.

**Barley**, spring, as green fodder (PIERRE and LEMÉTAYER), 1881, A., 755.

FEEDING EXPERIMENTS—

**Barley**, for malting and feeding purposes, some of the conditions influencing the quality of (TANNER), 1882, A., 888.

**Beans**, field, and lupines, comparison of the influence of, on the production of milk (KELLNER), 1881, A., 927.

**Beet-leaves** as fodder for cows (KIRCHNER and DU ROI), 1879, A., 813.

**Beet diffusion and press residues**, composition and nutritive value of (PELLET and LE LAVANDIER), 1880, A., 734; 1881, A., 933; (PETERMANN), 1881, A., 301; (SIMON-LEGRAND), 1881, A., 757. preservation of (MÄRCKER), 1881 A., 932.

**Biscuits**, forage, composition of (WARDEN), 1881, A., 637.

**Brandy distillery residues**, composition of (DE LEEUW), 1881, A., 757.

**Cabbages**, fodder, (LEIZOUR and NIVET), 1882, A., 423.

**Cacao rind** as fodder for calves (SAMEK), 1880, A., 502.

**Caroba beans**, digestibility and nutrient power of (WEISKE), 1880, A., 563.

**Cattle foods**, composition of (VOELCKER), 1873, 766; 1874, 706; 1876, i., 956; 1877, ii., 637; 1880, A., 678; (ANON.), 1879, A., 956.

**Clover**, composition and feeding value of, at different stages of growth (HEIDEN), 1873, 649.

**Clover hay**, comparative experiments on the digestion of two kinds of, by the horse and sheep (V. WOLFF), 1882, A., 237.

**Cocoa-nut meal**, composition of (PETERMANN), 1881, A., 301.

**Cocoa-nut oil-cake** (NALLINO), 1873, 87.

**Corncockle seeds** as fodder and distillery material (ULBRICHT), 1880, A., 501.

**Cotton seed meal** as fodder for milch cows (RITTER), 1880, A., 500; (PRESER), 1881, A., 636; (POGGE), 1882, A., 321.

**Dog biscuit**, composition of (MAYER), 1880, A., 836.

**Earth-nuts**. See Ground-nuts.

*Elodea canadensis*, nutritive value of (HOFFMEISTER), 1880, A., 500.

*Eriodendron anfractuosum* (*Kapok tree*), composition and nutritive value of cake made from the seed of (REINDERS), 1877, i., 105.



FEEDING EXPERIMENTS—

**Feeding-cakes**, occurrence of metallic tin in (CHURCH), 1875, 381.

**Flesh-meal** (FRÜHLING and SCHULZ), 1875, 1061.

as fodder for milch cows (FEHLAU), 1880, A., 501; (KELLER), 1881, A., 302.

American, for milch cows (SCHRODT and v. PETER), 1881, A., 758.

as fodder for horses (DÜNKELBERG and v. VOIGTS-RHETZ), 1880, A., 57.

fattening of pigs on (ANON.), 1881, A., 927.

**Fodder plants** of Italy, composition of (FUNARO), 1882, A., 1127.

of New South Wales, composition of (DIXON), 1881, A., 1067.

**Fodders**, contributions from the experimental station at Halle on (MÄRCKER), 1882, A., 422.

preparation and preservation of (KÖNIG), 1882, A., 1128.

composition of (RITTHAUSEN), 1878, A., 240; (GROSJEAN), 1879, A., 552; (THOMS), 1880, A., 343; (KRAUCH), 1880, A., 588; (ANON.), 1881, A., 636; (FASSBENDER), 1881, A., 1165; (LECLERC), 1882, A., 549.

analysis of materials used for (WITTELSHÖFER), 1880, A., 183.

diastatic action of some (SESTINI and FUNARO), 1882, A., 1128.

influence of, on the secretion of milk (FLEISCHMANN), 1880, A., 907.

influence of, on the quantity and quality of milk fat (WEISKE, SCHRODT, and DEHMEL), 1880, A., 184.

assimilation of ordinary (v. WOLFF), 1880, A., 173.

influence of the addition of fat to, on its digestibility (HOFMEISTER), 1874, 83.

influence of lactic acid in (SIEDAMGROTZKY and HOFMEISTER), 1880, A., 905.

action of acid gastric juice on the nitrogenous constituents of (STUTZER), 1881, A., 296.

green, modifications of composition which, undergo when preserved in pits (LECHARTIER), 1882, A., 329.

preservation of, in pits (LECHARTIER), 1879, A., 1049.

money value of (KÖNIG), 1881, A., 1067.

FEEDING EXPERIMENTS—

**Fodders**, estimation of chlorine in (NOLTE), 1880, A., 285.

estimation of fats in (SIEWERT), 1879, A., 558; (WAGNER), 1880, A., 762.

estimation of albuminoid nitrogen in (SESTINI), 1880, A., 190.

estimation of non-albuminoid nitrogen in (SCHULZE), 1880, A., 588, 764; 1882, A., 901.

estimation of proteids in (SESTINI), 1878, A., 740; (WAGNER), 1880, A., 588; (SCHULZE), 1880, A., 764.

estimation of salicylic acid in, by a colorimetric reaction (PELLET and v. GROBERT), 1881, A., 1175.

**Grain** as fodder (DEININGER), 1880, A., 183.

**Ground-nuts**, influence of, on the production of milk (KIRCHNER and Du Rot), 1880, A., 487.

**Ground-nut meal** as fodder for milch cows (POGGE), 1882, A., 321.

**Hay**, digestibility of (v. WOLFF), 1880, A., 916.

influence of steaming on the digestibility of (HORNBERGER), 1880, A., 734.

steamed, digestibility of (KREUSLER), 1880, A., 498.

digestibility of the fat of (KÖNIG), 1873, 648; (SCHULZE), 1874, 85.

Alpine, feeding value of (KRAMER), 1881, A., 1065.

**Hemp-cake** and its adulteration (RENOUARD and CORENWINDER), 1882, A., 84.

**Hops**, spent, as fodder (KLEEMANN), 1879, A., 1050; (KELLNER), 1880, A., 344; (MÄRCKER and WEIN; WEISKE, KENNEDY and SCHULZE), 1880, A., 502.

**Kapok-cake**, composition, and nutritive value of (REINDERS), 1877, i., 105.

**Linseed-cake**, examination of (HOLDEFLEISS), 1881, A., 636; 1882, A., 549; (RENOUARD and CORENWINDER), 1882, A., 84.

**Linseed meal** (HOLDEFLEISS), 1881, A., 636; 1882, A., 549.

**Lucerne**, digestibility of, in the fresh state and as hay (KÜHN, HAASE and BÄSECKE), 1873, 1156.

**Lucerne hay**, composition and digestibility of (v. WOLFF), 1878, A., 909.

**Lupines**, use of, as fodder (v. PUTTKAMMER), 1881, A., 116.

## AGRICULTURAL CHEMISTRY.

### FEEDING EXPERIMENTS—

**Lupines**, purification and digestibility of (KELLNER), 1880, A., 935; 1881, A., 838.

and field beans, comparison of the influence of, on the production of milk (KELLNER), 1881, A., 927.

**Lupine-sickness** in sheep (SCHULZ and WILDT), 1880, A., 57; (KROCKER; KÜHN), 1880, A., 916; (ROLOFF), 1882, A., 637.

prevention of (KÜHN), 1881, A., 934.

**Maize**, feeding horses with (MÜNTZ), 1882, A., 415.

**Maize-cakes**, effect of, on milk production (HENGELFELD), 1880, A., 725.

**Maize residues** as fodder (PORION and MEHAY), 1882, A., 672.

**Malt**, nutritive value of (KELLNER), 1879, A., 1050.

**Manufacturers' waste**, feeding value of some (V. MOSER), 1880, A., 183.

**Meat-flour** from Fray-Bentos (POTT), 1873, 1275.

experiments on the digestibility and nutritive power of (V. WOLFF), 1878, A., 440.

feeding experiments with, on pigs (HOFMEISTER), 1874, 595.

feeding experiments with, on sheep (HOFMEISTER), 1876, i., 722.

**Oatmeal**, its composition and value as a food-stuff (DUJARDIN-BEAUMETZ and HARDY), 1874, 912.

**Oat-straw**, digestibility of (V. WOLFF), 1880, A., 916.

fat of (KÖNIG, KIESOW and ARONHEIM), 1874, 597.

**Oats**, crushed, as fodder (BREYMAN), 1881, A., 837.

**Oil-cakes**, digestibility of some (V. WOLFF), 1882, A., 86, 647.

### FEEDING EXPERIMENTS—

**Oil-cakes**, influence of different, on milk production (POGGE; THREADWELL), 1882, A., 321.

testing of, for myronic acid (DIRCKS), 1882, A., 1236.

advantages of only partially removing the fat in (WITTMACK), 1879, A., 99.

proteids in (RITTHAUSEN), 1880, A., 676; 1881, A., 833; 1882, A., 234.

**Olive-cakes**, composition of (ANON.), 1873, 403.

**Palm-nut-cakes**, composition of (LEHMANN), 1876, ii., 323.

**Palm-nut meal**, composition of (PETERMANN), 1881, A., 301.

**Pea holms**, digestibility of (V. WOLFF), 1880, A., 916.

**Pea-nut**. See Ground-nut.

**Peas**, comparison of the digestibility of, by horses and sheep (V. WOLFF), 1882, A., 415.

**Rice meal**, composition of (VOELCKER), 1877, ii., 637; 1880, A., 678. feeding cows with (SCHRODT, DUROI and V. PETER), 1881, A., 297.

**Soja bean**, digestibility and nutritive value of (WEISKE, DEHMEL and SCHULZE), 1880, A., 501.

use of, as food for milch-cows (BLASCOVICS), 1882, A., 83.

fattening of pigs on (ANON.), 1881, A., 927.

**Starchmakers' residues**, composition of (HOLDEFLEISS), 1880, A., 595.

**Straw-pulp**, quick method of preparing (DIETERICH), 1876, i., 136.

*Symphytum asperinum* as a fodder (WILDT), 1880, A., 735.

**Weed-seeds** used as fodder, examination of a mixture of (NOBBE), 1882, A., 1226.

## PLANTS.

### PLANT COMPOSITION AND METABOLISM—

**Plants**, chemical processes in (EMMERLING), 1873, 79; 1875, 176; 1877, ii., 348.

chemical studies on the skeleton of (FREMY and URBAIN), 1882, A., 420.

electrical researches on (BURDON SANDERSON), 1874, 427; 1882, A., 638; (KUNKEL), 1882, A., 638.

electricity of (RANKE), 1873, 713.

phosphorescence in (CRIÉ), 1882, A., 422.

### PLANT COMPOSITION AND METABOLISM—

**Plants**, and the atmosphere, functions of stomates and leaves, in promoting exchange of gases between (MERGET), 1877, ii., 350, 634.

etiolated, causes of the change in the form of (GODLEWSKI), 1880, A., 177.

alteration in, when grown on heated soils (PRILLIEUX), 1882, A., 641.

changes accompanying the ripening of (DEHÉRAIN and BRÉAL), 1882, A., 80, 419.

PLANT COMPOSITION AND METABOLISM—

**Plants**, loss of dried substance in, during ripening (MARIÉ-DAVY), 1880, A., 820.  
 rise of sap in (BÖHM), 1877, ii., 348.  
 metamorphoses of the groups  $\text{COOH}$ ,  $\text{CH.OH}$ ,  $\text{CH}_3$ , and  $\text{CH}_2$  in living (STUTZER), 1877, i., 223.  
 amount of dew on (HAMPEL), 1880, A., 493.  
 power of, to deprive the soil of water (HEINRICH), 1875, 1278.  
 growing in natural soils, behaviour of, towards water (HAVENSTEIN), 1880, A., 737.  
 composition of, certain bye-products of (DE VRIES), 1882, A., 761.  
 constancy in the composition of (PELLET), 1881, A., 753.  
 influence of cœlestine on the constituents of (STODDART), 1877, ii., 281.  
 formation of acids in (VINES), 1878, T., 385.  
 function of organic acids in (MAYER), 1876, i., 414.  
 acid-equivalent of the alkalis in (CHAMPION and PELLET), 1875, 1216.  
 albumin in (KELLNER), 1880, A., 279.  
 locality of albumin secretion in (MÜLLER-ERZBACH), 1880, A., 492.  
 decomposition of albumin in (SCHULZE), 1878, A., 909; 1880, A., 493; 1881, A., 634.  
 alcohol and paraffins in (GUTZEIT), 1875, 1246; 1880, A., 914.  
 amido-compounds in (KELLNER), 1879, A., 819; 1880, A., 279, 731.  
 estimation of amido-compounds in (SCHULZE), 1882, A., 1006.  
 ammonia in (PELLET), 1880, A., 568; 1881, A., 116; 1882, A., 885.  
 decomposition of ammonia in (KELLNER), 1880, A., 279, 731.  
 dicotyledonous, separation of calcium carbonate in the wood of (MOLISCH), 1882, A., 82, 887.  
 calcium oxalate in (VAN DER PLOEG), 1880, A., 914.  
 decomposition of carbohydrates in (VINES), 1878, T., 386.  
 how is carbon dioxide reduced in, to form carbohydrates? (REINKE), 1882, A., 1312.  
 decomposition of carbon dioxide in the solar spectrum by the green parts of (TIMIRIAZEFF), 1874, 285; 1877, ii., 635.

PLANT COMPOSITION AND METABOLISM—

**Plants**, influence of light on the liberation of carbon dioxide by (FAMINTZIN), 1881, A., 1060.  
 influence of the spectrum colours on the decomposition of carbon dioxide by (PFEFFER), 1873, 400.  
 production of cellulose in (DURIN), 1877, i., 106.  
 supposed transformation of cellulose into gum in (MERCADANTE), 1876, i., 954.  
 colouring matters of (SORBY), 1874, 279; (SAVIGNY and COLLINÉAU), 1882, A., 309.  
 action of ozone on the (LEEDS), 1880, A., 58.  
 which grow on primordial rocks, presence of copper in (DIEULAFAIT), 1880, A., 494.  
 alcoholic and acetic fermentation of the fruits, flowers and leaves of certain (DE LUCA), 1876, ii., 649.  
 researches on the intracellular alcoholic fermentation of (MÜNTZ), 1878, A., 527.  
 butyric fermentation of (SCHÜTZENBERGER), 1875, 910; 1876, i., 99; (BÖHM), 1875, 1285; 1878, A., 162.  
 cellulosic fermentation produced by (DURIN), 1877, i., 106.  
 unorganised ferments in (KOSMANN), 1877, i., 488; (KRAUCH), 1878, A., 996; 1880, A., 175.  
 peptone-forming ferments in (v. GORUP-BESANEZ), 1875, 1286; 1876, i., 738; ii., 322; (v. GORUP-BESANEZ and WILL), 1876, ii., 322; (KRAUCH), 1882, A., 880.  
 starch-altering ferments in (BARANETZKY), 1880, A., 334.  
 estimation of glutamine in (SCHULZE and BARBIERI), 1877, ii., 324; 1881, A., 313.  
 hydantoin in (SCHULZE and BARBIERI), 1882, A., 243.  
 emission of hydrogen by (POLLACCI), 1876, ii., 540.  
 supposed existence of hydrogen peroxide in the organism of (CLERMONT), 1875, 1216; (BELLUCCI), 1876, i., 954; 1879, A., 665.  
 equivalent substitution of mineral substances in (CHAMPION and PELLET), 1877, i., 98.  
 nitrogenous constituents of (SCHULZE), 1882, A., 645; (SCHULZE and EUGSTER), 1882, A., 885.  
 decomposition of nitric acid in (KELLNER), 1880, A., 279, 731.

**PLANT COMPOSITION AND METABOLISM—**  
**Plants**, dissociation of nitric acid by, in the dark (BOUSSINGAULT), 1881, A., 836; 1882, A., 327.  
 occurrence and estimation of nitrates in (BING), 1881, A., 122.  
 estimation of nitrogen in (MORGEN), 1881, A., 464.  
 estimation of nitrogen compounds in (SCHULZE and BARBIERI), 1881, A., 312.  
 estimation of non-albuminous nitrogen-compounds in (KELLNER), 1880, A., 513.  
 exhalation of oxygen by, in the absence of carbon dioxide (MAYER), 1876, i., 95.  
 evolution of oxygen by, in sunlight (HOPPE-SEYLER), 1879, A., 819.  
 evolution of oxygen by, under boiled water (BÖHM), 1876, ii., 321.  
 supposed disengagement of ozone from (BELLUCCI), 1874, 596.  
 formation of ozone by the contact of, with hydrogen peroxide (COHNÉ), 1876, ii., 539.  
 presence of peptones in (SCHULZE and BARBIERI), 1882, A., 318.  
 distribution of potash and soda in (PELIGOT), 1873, 929.  
 proteids in (KELLNER), 1880, A., 279, 731.  
 decomposition of proteids in (SCHULZE), 1880, A., 493; 1881, A., 634.  
 estimation of proteids and non-albuminous matter in (SCHULZE), 1882, A., 901.  
 estimation and separation of protein matter in (STUTZER), 1881, A., 660.  
 pyrocatechol in (VINES), 1878, T., 380; (PREUSSE), 1880, A., 417.  
 origin of saccharine substances in (PERREY), 1882, A., 881.  
 silicon compounds in (LANGE), 1878, A., 682.  
 sodium in (CONTEJEAN), 1878, A., 681.  
 starch in. See Starch under Carbohydrates.  
 detection of certain substances in, by chemical reagents (BÖTTGER), 1874, 715.  
 water distribution in (KRAUS), 1882, A., 327.  
 amount of water appropriated by (WOLLNY), 1881, A., 1060.  
 exhalation of water-vapour by (EDER), 1876, ii., 113.  
 formation of xanthine bodies in germinating (SALOMON), 1882, A., 987.

**PLANT COMPOSITION AND METABOLISM—**  
**Plants**, zinc in (LECHARTIER and BELLAMY), 1877, ii., 504.  
**Plant analysis** (v. HARTSEN), 1874, 494, 705; (CHURCH), 1877, ii., 210; (PARSONS), 1880, A., 754.  
**Ash** of various parts of a plant (VOGEL), 1881, A., 837.  
 soda as a constituent of (BUNGE), 1874, 910.  
 estimation of phosphoric acid in (v. RAUMER), 1882, A., 553.  
 detection of manganese as phosphate in (CAMPANI), 1877, ii., 223.  
 estimation of alkalis in (HORNBERGER), 1878, A., 245.  
**Cells**, chemical nature of the nucleus of (ZACHARIAS), 1882, A., 422.  
 influence of certain substances on (DETNER), 1882, A., 881.  
 absorption of carbonic acid by (BÖHM), 1877, ii., 348.  
 aldehyde-like substances in, of plants containing chlorophyll (REINKE), 1882, A., 243.  
 formation of formaldehyde in (VINES), 1878, T., 380.  
 composition of gases contained in (BÖHM), 1878, A., 802.  
 rubidium as a substitute for potassium in (LOEW), 1878, A., 909.  
**Chlorophyll** (v. HARTSEN), 1873, 513; (FILHOL), 1874, 1173; 1875, 371; 1876, ii., 111; (SACHSSE), 1877, ii., 208; 1878, A., 516; 1882, A., 67, 412; (FREMY), 1877, ii., 629; (VINES), 1878, T., 375; (CHURCH), 1878, A., 987; (HOPPE-SEYLER), 1880, A., 53, 894; 1882, A., 412; (GAUTIER), 1880, A., 266; (PRINGSHEIM), 1880, A., 560.  
 from *Eucalyptus Globulus* (SCHUNCK), 1880, A., 894.  
 in epidermis of foliage of phanerogams (STÖHR), 1880, A., 910.  
 presence and mode of origin of, in parasitic and saprophytic plants (VINES), 1878, T., 381.  
 replacing the carbonic acid of air necessary for the production of, in parasitic and saprophytic plants, by organic substances (SCHMOEGER), 1879, A., 737.  
 formation of (FRÉBAULT), 1874, 1172.  
 influence of intermittent light on the formation of (WIESNER), 1874, 999; 1881, A., 930.  
 formation of, in the dark (FLAHAULT), 1880, A., 910.



PLANT COMPOSITION AND METABOLISM—

**Chlorophyll**, artificial production of, in living plants (KRAUS), 1878, A., 238; 1880, A., 57.  
 preparation of pure (V. HARTSEN), 1874, 705.  
 composition of (ROGALSKI), 1880, A., 561.  
 spectrum of (CHAUTARD), 1873, 341, 996, 997, 1258; 1875, 171; (MILLARDET), 1873, 996; (RUSSELL and LAPRAIK), 1882, T., 334.  
 modifications of the, under the influence of alkalis (CHAUTARD), 1873, 582.  
 influence of light of various colours on the (CHAUTARD), 1873, 713.  
 new supernumerary bands produced in solutions of, under the influence of sulphuretted agents (CHAUTARD), 1874, 643.  
 in the residues of digestion, spectroscopic examination of (CHAUTARD), 1873, 521.  
 action of light on (COSSA), 1874, 643.  
 change of colour in (TRÉCUL), 1877, ii., 629.  
 new red colouring matter accompanying (BOUGAREL), 1877, ii., 790.  
 and its relation to the colouring matter of blood (LIEBERMANN), 1877, ii., 208.  
 function of, in the vine (BRIOSI), 1877, i., 732.  
 the part borne by, in the assimilative action of plants and the spectrum of leaves (GERLAND), 1873, 401.  
 growth of plants destitute of (BOUSINGAULT), 1876, ii., 112.  
 conversion of, into a carbohydrate (VINES), 1878, T., 381.  
 substitution of, for copper-salts in the preservation of fruits and green vegetables (GUILLEMARE), 1878, A., 188.  
 corpuscles, origin of (MIKOSCH), 1879, A., 174.  
 colouration of (VINES), 1878, T., 381.  
 starch-grains in (VINES), 1878, T., 376.  
 granules, formation of starch in (BÖHM), 1876, i., 952.  
**Chlorophyllan** (HOPPE-SEYLER), 1880, A., 53, 894; 1882, A., 412; (GAUTIER), 1880, A., 267.

PLANT COMPOSITION AND METABOLISM—

**Erythrophyll** (HOPPE-SEYLER), 1880, A., 53.  
**Albinism**, vegetable, chemical study of (CHURCH), 1879, T., 33; 1880, T., 1.  
**Leaves**, influence of light on the growth of (PRANTL), 1874, 381.  
 composition of (FLICHE and GRANDEAU), 1877, i., 334.  
 chemical composition and functions of (CORENWINDER), 1878, A., 595.  
 green, electromotive action of the upper surface of (BURDON SANDERSON), 1874, 427; 1882, A., 638; (KUNKEL), 1882, A., 638.  
 light emitted by (VOGEL), 1873, 647.  
 gaseous diffusion between, and the atmosphere (MERGET), 1874, 380, 759; 1877, ii., 350, 634.  
 absorptive and diffusive power of (MAQUENNE), 1882, A., 81.  
 energy of assimilation in (WEBER), 1880, A., 910.  
 absorption of water by (TSCHAPLOWITZ), 1879, A., 819.  
 absorption of water and lime salts by (BÖHM), 1877, ii., 209, 356.  
 formation of oxygen by, immersed in water containing carbonic acid (BÖHM), 1874, 703.  
 kept in darkness, absorption of oxygen and emission of carbonic acid by (DEHÉRAIN and MOISSAN), 1874, 909.  
 emissive power of (MAQUENNE), 1875, 1216.  
 action of soda on (EBERMAYER), 1878, A., 163.  
 influence of annual temperature on change of colour in (HOFFMANN), 1880, A., 910.  
 autumnal colouring of (KRAUS), 1873, 1049.  
 winter colouring of non-deciduous (HABERLANDT), 1877, ii., 349.  
 green, blanching of, in bright sunshine (BÖHM), 1878, A., 238.  
 variegated (CHURCH), 1877, ii., 914.  
 of woods, examination of (EBERMAYER), 1875, 1277; (DULK), 1875, 1282.  
**Protoplasm**, composition of (RODEWALD and REINKE), 1881, A., 753.  
 chemical distinctions between living and dead (LOEW and BOKORNY), 1882, A., 546.

PLANT COMPOSITION AND METABOLISM—

**Protoplasm**, aldehyde nature of living (LOEW and BOKORNY), 1882, A., 547, 882.

phases of the life of (HEITZMANN), 1874, 596.

**Protoplasmic life**, power of certain substances to prevent the development of (CALVERT), 1873, 405.

**Roots**, amount of non-albuminous nitrogen in (KELLNER), 1882, A., 83.

absorption and emission of gas by (DEHÉRAIN and VESQUE), 1877, ii., 350.

absorption of water by (VESQUE), 1878, A., 681.

influence of salts on the absorption of water by (VESQUE), 1880, A., 911.

supposed emission of carbonic anhydride by (MERCADANTE and COLOSI), 1875, 903.

evolution of carbonic anhydride by (CAUVET), 1881, A., 931.

influence of, on putrefaction (JEANNEL), 1876, i., 99.

**Sap**, rise of, in plants (BÖHM), 1877, ii., 348.

**Seeds**, specific gravities of (TSCHAPLOWITZ), 1877, ii., 798.

method of estimating the air space in (ADAMEC and KLOSE), 1880, A., 189.

proteids of (RITTHAUSEN), 1878, A., 81.

water in (TSCHAPLOWITZ), 1877, ii., 797.

result of drying (WOLLNY), 1880, A., 493.

germination of. See Germination. torpid condition of (VAN TIEGHEM and BONNIER), 1881, A., 837.

resistance of, to the prolonged action of chemical agents (GIGLIOLI), 1880, A., 280.

action of vapours on (SESTINI), 1881, A., 837.

influence produced on the growth of the plant by previously steeping the (KRAUS), 1881, A., 300.

influence of the weight of, on the yield of the crop (BIRNER and TROSCHE), 1882, A., 1127.

sowing, thin or thick (HEINRICH), 1882, A., 329.

influence of the distance between, on the growth and quality of the crops (WOLLNY), 1882, A., 646.

**Stems**, pressure in (BÖHM), 1881, A., 60.

PLANT COMPOSITION AND METABOLISM—

**Tissue**, cellular, nutritive value of (REICHARDT), 1877, ii., 347.

vegetable, combination of tannin and (MÜNTZ), 1877, ii., 350.

**Respiration** (RISCHAWI), 1877, i., 331; (FREYBERG), 1879, A., 736; 1880, A., 335; (JAMIESON), 1880, A., 911; (BORODIN), 1882, A., 641.

intramolecular (WORTMANN), 1880, A., 911.

of land-plants (BÖHM), 1873, 1049. dependence of, on temperature (MAYER), 1877, i., 334.

of albino foliage (CHURCH), 1880, T., 1.

of seeds during germination, influence of light on (PAUCHON), 1882, A., 419.

of aquatic plants (SCHÜTZENBERGER and QUINQUAUD), 1873, 1252; (BÖHM), 1875, 1285.

of marsh and water plants (FREYBERG), 1880, A., 335.

**Transpiration** (MASURE), 1882, A., 87; (COMES), 1882, A., 418.

physiological signification of (REINITZER), 1882, A., 327.

influence of nutritive material on (BURGERSTEIN), 1880, A., 335.

effect of light on (COMES), 1882, A., 418.

influence of light and of radiant heat on (WIESNER), 1877, ii., 349.

of albino foliage (CHURCH), 1880, T., 1.

**Plant growth** in artificial solutions (FARSKÝ), 1880, A., 337.

when destitute of chlorophyll (BOUS-SINGAULT), 1876, ii., 112.

influence of atmospheric electricity on (GRANDEAU), 1878, A., 908; 1879, A., 818; (NAUDIN), 1880, A., 909.

influence of the electric light on (SIEMENS), 1881, A., 962; 1882, A., 326, 639.

influence of light on (MACAGNO), 1874, 703; 1875, 177; (KRAUS), 1878, A., 239; 1880, A., 57; (SCHÜBELER), 1880, A., 911.

region of the solar spectrum indispensable to (BERT), 1879, A., 336.

influence of barometric pressure on the phenomena of (BERT), 1873, 1250.

relations between the chemical constitution of carbon compounds and their physiological importance to (STUTZER), 1878, A., 445.

PLANT COMPOSITION AND METABOLISM—

**Plant growth**, influence of aluminium salt on (BERGSTRAND), 1876, ii., 539.  
 influence of ammonium sulphate containing thiocyanate on (KOHLE-RAUSCH), 1875, 179.  
 action of carbon monoxide on (STUTZER), 1877, i., 334.  
 influence of carbon dioxide on verdure (BÖHM), 1874, 704.  
 influence of the amount of carbon dioxide in the air on (GODLEWSKI), 1874, 381.  
 influence of an increased quantity of carbon dioxide on (MAYER), 1881, A., 1060.  
 in an atmosphere rich in carbon dioxide (DEHÉRAIN and MAQUENNE), 1882, A., 639.  
 effects of, on the amount of matter removed from the soil by rain (PREVOST), 1881, T., 475.  
 influence of space on (WOLLNY), 1882, A., 880.  
 influence on, by previously steeping the seed (KRAUS), 1881, A., 300.  
 lime in (v. RAUMER and KELLERMANN), 1880, A., 568.  
 effect of various manures on (MASTERS and GILBERT), 1873, 522.  
 time at which potash exercises the greatest influence on (MAGERSTEIN), 1882, A., 988.  
 influence of tannin on (MERCADANTE), 1875, 905.  
 increase of dry matter in plants during (ANON.), 1880, A., 416.  
**Plant nutrition**, part borne by chlorophyll in the assimilative action of plants (GERLAND), 1873, 401.  
 influence of coloured light on assimilation by plants (LOMMEL), 1873, 292.  
 action of atmospheric nitrogen on (DEHÉRAIN), 1873, 1048, 1154.  
 absorption of atmospheric ammonia by plants (MAYER), 1874, 385; 1875, 658; (SCHLESING), 1874, 999; 1882, A., 242.  
 absorption of bicarbonates from natural waters by plants (BARTHÉLEMY), 1876, ii., 113.  
 absorption of atmospheric nitrogen by plants (GATELLIER), 1879, A., 818.  
 absorption of oxygen, and expiration of carbonic anhydride by plants (MOISSAN), 1880, A., 416.  
 absorption of selenium by plants (CAMERON), 1879, A., 955.  
 absorption of water from soils by plants (HEINRICH), 1875, 1278.

PLANT COMPOSITION AND METABOLISM—

**Plant nutrition**, passage of nutritive material in plants (DESBARRES), 1880, A., 493.  
 passage of plant material in seedlings (DETMER), 1880, A., 335.  
 functions of vegetable ducts (BÖHM), 1880, A., 911.  
 value of calcium salts in (BÖHM), 1877, i., 735.  
 humus substances in their relation to (SIMON), 1876, i., 731.  
 supply of nitrogen to plants (HEIDEN), 1879, A., 739.  
 form of nitrogen most suitable for (LEHMANN), 1876, i., 733.  
 the combination in which nitrogen is most available for (WEIN), 1882, A., 769.  
 quantity of nitrogen which must be supplied to plants in order to ensure their normal development as field crops (THAER), 1879, A., 668.  
 course of nitrogen and mineral constituents in the development of the early shoots (v. SCHROEDER), 1880, A., 335.  
 assimilation of soda by plants (DEHÉRAIN), 1879, A., 666.  
**Plant diseases** (HOFFMANN), 1877, ii., 210; (ANON.), 1879, A., 820; (KÜHN), 1882, A., 888.  
**Plants**, damage done to, by the action of boric acid, and borates (PELIGOT), 1877, i., 223.  
 by coal gas (ANON.), 1873, 401, 647; (SPÄTH and MEYER), 1874, 86; (BÖHM), 1874, 597.  
 by furnace gases (REUSS), 1881, A., 1064, 1179.  
 by smoke (FREYTAG), 1873, 1155; 1882, A., 1333; (v. SCHROEDER), 1874, 492; 1880, A., 496; (KÖNIG), 1880, A., 497; 1882, A., 331.  
 by factory waste water (KÖNIG), 1880, A., 497; 1882, A., 331.  
 is peat smoke injurious to vegetation? (PRESTEL), 1873, 647.  
**Enzymes**. See Main Index.  
**Plant-germination** (DEHÉRAIN and LANDRIN), 1874, 1000; (LECLERC), 1875, 777; (DEHÉRAIN), 1876, i., 96.  
 means of promoting (BÖTTGER), 1875, 101.  
 in nitrous oxide (COSSA), 1876, i., 97.  
 in pure oxygen (BÖHM), 1874, 704.  
 influence of light on (STEBLER), 1881, A., 1061.

PLANT COMPOSITION AND METABOLISM—

- Plant-germination**, influence of light on the respiration of seeds during (PAUCHON), 1882, A., 419.  
 influence of temperature on (JUST), 1879, A., 393.  
 maximum and minimum limits of temperature for (HAERLANDT), 1874, 910.  
 influence of temperature on the germination of bunt spores (SCHNIDLER), 1881, A., 455.  
 development of heat during (BONNIER), 1882, A., 242.  
 function of fat in (LADUREAU), 1881, A., 59; 1882, A., 883.  
 influence of camphor on (VOGEL), 1874, 177.  
 influence of ethylic iodide on (RABUTEAU), 1880, A., 915.  
 influence of salicylic acid, thymol, and some essential oils on (HECKEL), 1879, A., 172; 1880, A., 335.  
 persistence of the germinating power in (MISSAGHI), 1876, i., 955.

**Forests**, investigations on the chemistry of (DULK), 1875, 1279.

- influence of, on the rainfall (MATHIEU; FAUTRAU), 1880, A., 737.

**Vegetable glycogenesis** (JODIN), 1878, A., 239.

**Vegetable physiology**, chemical aspect of (VINES), 1878, T., 375.

PLANTS—

- Acrogens**, chemical composition of the wood of (HAWES), 1874, 1000.  
**Agave**, influence of the leaves and flowering branches on the nature and quantity of the sugar contained in the flower-stem of the (BALLANT), 1877, ii., 506.  
*Aleurites triloba*, fruit of (*candle-nuts*), composition of the (NALLINO), 1873, 85; (MUTSCHLER and KRAUCH), 1879, A., 957.  
**Annuals**, ripening of (DEHÉRAIN and BRÉAL), 1882, A., 80, 419.  
**Apple**, bitter (*Citrullus Colocynthis*) as an article of food (FLÜCKIGER), 1873, 649.  
**Apple tree**, alcoholic fermentation in the roots of the (VAN TIEGHEM), 1881, A., 115.  
**Apples**, gas contained in (BENDER), 1875, 661.  
 ripening of, after gathering (PORTELE), 1880, A., 179.  
 estimation of sugars and acid in 37 varieties of eating, and six varieties of cider (TRUELLE), 1877, ii., 514.

PLANTS—

- Arachis hypogaea*. See Ground-nut.  
**Artichoke**, Jerusalem, influence exerted on the growth of, by allowing the "sets" to decay before planting (KRAUS), 1881, A., 456.  
 carbohydrates of (DIECK and TOLLENS), 1878, A., 778; 1880, A., 619.  
**Asparagus**, sugar in (VOGEL), 1874, 176.  
 abnormal constituents of urine after eating (HILGER), 1874, 595.  
*Aspergillus niger*, influence of metallic salts on the growth of (ANON.), 1873, 648.  
*Aster Amellus*, composition of the ash of (COUNCLER), 1882, A., 887.  
**Barley**, organic constituents of (KÜHNEMANN), 1877, i., 224.  
 experiments with (LAWES and GILBERT), 1874, 179; (HÄSSELBARTH), 1877, ii., 351.  
 experiments at Woburn (VOELCKER), 1882, A., 649, 1226.  
 continuous cropping of (VOELCKER), 1881, A., 638; 1882, A., 329.  
 depreciation of, by overgrowth (LAUENSTEIN), 1880, A., 179.  
 manuring experiments on (WAGNER and ROHN), 1880, A., 135; (KOCH), 1882, A., 1130.  
 manuring experiments on summer (ZOEHL), 1881, A., 1077.  
 best form of nitrogenous food for (HÄSSELBARTH), 1878, A., 805.  
 effect of artificial manures on the growth of (BOCHMANN and DÖRING), 1879, A., 828.  
 assimilation of phosphates by (PEREPELKIN), 1873, 87.  
 manuring of, with saltpetre (CHANCELLOR), 1881, A., 938.  
 manuring of, with Chili saltpetre (BOCHMANN), 1879, A., 1051.  
 valuation of (GRIESSMAYER), 1881, A., 946.  
 seeds, influence of temperature on the evolution of carbonic anhydride by (PEDERSEN), 1879, A., 1048.  
 chevalier (WAGNER), 1882, A., 549.  
 germination of (LECLERC), 1875, 661.  
 germinating, experiments on (DAY), 1880, T., 645.  
 sprouting (DAY), 1882, A., 418.  
 microzymes of germinated, as producers of diastase and synaptase (BÉCHAMP), 1877, i., 106.



PLANTS—

- Barley**, damage done to, by sprouting in the field (ANON.), 1879, A., 492.  
See also Main Index.
- Beans**, cultivation of various kinds of, with special regard to the amount of nutrients produced (GRAHL), 1882, A., 83.  
damage done to seeds of, by weevils (WOLLNY), 1880, A., 919.  
buff, formation of vegetable albumin in (EMMERLING), 1880, A., 341.  
field, manuring of (RIDOLFI), 1880, A., 569.  
horse, growth of (POTR), 1880, A., 567.  
Italian, observations on the damage caused by the bean insect (GROSJEAN), 1879, A., 552.  
kidney, loss of water from, when ripening (BRIEM), 1882, A., 243.
- Beech leaves** (WANKLYN), 1874, 86.  
composition of (RISSMÜLLER), 1874, 490.  
examination of, at different stages of their growth (DULK), 1875, 1281.  
constitution of frozen (v. SCHROEDER), 1880, A., 416.  
composition of the scales on the buds of (CHURCH), 1877, ii., 210.
- Beech tree blight**, a new (KÖNIG), 1873, 1156.
- Beech trees**, seedling, experiments on the chemistry of (DULK), 1875, 1280.
- Beetroot** (sugar-) (FREMY and DEHERAIN), 1875, 906; 1876, i., 955; (BAUDRIMONT), 1880, A., 495.  
value of different varieties of (MÄRCKER), 1882, A., 424.  
experiments with various sorts of (SAMEK and PORTELE), 1880, A., 59; (BRIER and JEHLE), 1881, A., 60; (KUIEN), 1881, A., 301.  
cultivation of (BEHREND and MORGEN; HANAMANN), 1880, A., 502; (LADUREAU), 1880, A., 736, 917; (VILMORIN), 1880, A., 821; (WOLLNY), 1881, A., 60.  
cultivation of various kinds of (GODEFROY and DUDOUY), 1881, A., 117; (NORD), 1882, A., 243.  
Bertel's method of growing (MAREK), 1882, A., 244.  
cultivation of, in the Campagna Romana (SESTINI and DEL TORRE), 1873, 1254; (SESTINI, MARRO and DEL TORRE), 1875, 1047.

PLANTS—

- Beetroot**, cultivation of, in Vacluse (PICHARD), 1882, A., 244.  
experiments on the growth of, without soil (BRETSCHNEIDER), 1875, 1278.  
influence of heat on the growth of (BRIEM), 1881, A., 633.  
distribution of heat and rain during the growth of (HANAMANN), 1880, A., 178; (BRIEM), 1882, A., 990.  
influence of light on the growth of (BRIEM), 1879, A., 1047; 1881, A., 633, 930.  
influence of time of manuring on the growth of (LADUREAU), 1879, A., 825.  
influence of frost on the composition of (NINGER), 1881, A., 1084.  
increase of root and leaf of, during growth (BRIEM), 1882, A., 640.  
planting of (HANAMANN), 1880, A., 502.  
cultivation, exhaustion of the soil by (LIEBSCHER; BRIEM; BURGER), 1879, A., 1050.  
cause of beet-sickness in soils during (KÜHN), 1881, A., 634.  
manuring of (BODENBENDER; VIBRANS), 1880, A., 137; (HANAMANN), 1880, A., 509; (PLUCHET), 1880, A., 741; (MÄRCKER), 1880, A., 741, 923; 1881, A., 1078; 1882, A., 654; (DUDOUY; POGGE), 1881, A., 61; (BRIEM; v. MOSER), 1881, A., 185; (GOESSMANN), 1881, A., 418; (CHAMPOYNOIS and PELLET), 1881, A., 938; (DRECHSLER), 1882, A., 89; (WILDT), 1882, A., 93; (THIESSEN), 1882, A., 1314.  
in Brunswick (SCHULTZE), 1882, A., 767.  
with alkali salts (PAGNOUL), 1875, 908.  
with ammonium sulphate (LAGRANGE), 1875, 909.  
with potash salts (MÄRCKER), 1882, A., 1130.  
with potassium sodium nitrate (HEINE; DRECHSLER), 1882, A., 771.  
with stable-dung (MÄRCKER), 1881, A., 842.  
influence of superphosphates on the percentage of sugar in (JACQUEMART), 1882, A., 1314.  
saline matters which the, derives from the soil and from manures (PELIGOT), 1875, 378.

PLANTS—

- Beetroot**, nutritive value of seed-bearing (LECLERC), 1879, A., 822.  
respiration of, and air in (HEINTZ), 1873, 1050.  
arabic acid in (SCHEIBLER), 1873, 1124.  
gelatinous matter in (VAN TIEGHEM), 1880, A., 908.  
nitrogen and ammonia in (CHAMPION and PELLET), 1876, i., 420.  
nitrates in (BARRAL), 1879, A., 337; 1880, A., 495; (LADUREAU), 1879, A., 826; (PAGNOUL), 1880, A., 494.  
distribution of potassium nitrate in (PELLET), 1880, A., 733.  
examination of (BARRAL; WAGNER; BAUDRIMONT), 1880, A., 495; (SCHULZE), 1880, A., 586.  
value constant for (KNAUER), 1881, A., 851.  
relation between the sugar and mineral and nitrogenous matters in (VIOLETTE), 1875, 376; (PELLET), 1880, A., 569.  
valuation of, according to the density of their juice (DURIN), 1875, 1284.  
proportion of sugar to the weight of (FELTZ and BRIEM), 1880, A., 519.  
examination of, for grape sugar (KRAUSE), 1874, 1015.  
method of selecting, for seeding (VIBRANS), 1879, A., 822; (DERVAUX-IBLED), 1880, A., 134.  
See also *Sucrose* under *Carbohydrates*.  
**Beet-root ash** (PELLET), 1880, A., 922.  
working of (PFEIFFER), 1873, 99.  
preparation of rubidium from (PFEIFFER), 1873, 474.  
**Beet-root diffusion residues**. See under *Feeding experiments*.  
**Beetroot leaves**, changes produced in, by fermentation (KELLNER), 1881, A., 302.  
preservation of (GERLAND; ROBERT), 1879, A., 960.  
oxalic acid in (MÜLLER), 1880, A., 733.  
influence of, on the production of sugar (CORENWINDER and CONTAMINE), 1878, A., 997; 1880, A., 336.  
presence of sugar in (CORENWINDER), 1877, i., 336; (PIERRE), 1877, i., 487.

PLANTS—

- Beetroot leaves**, ratio of sugar to the phosphoric acid in (PELLET), 1879, A., 818.  
**Beetroot sap**, quotient of (v. SACHS), 1880, A., 931.  
estimation of (GAWALOWSKI), 1880, A., 829.  
organisms in (CIENKOWSKI), 1880, A., 334.  
**Beetroot seeds**, cultivation of (MÜLLER), 1880, A., 920.  
composition of (PELLET and LIEBSCHÜTZ), 1880, A., 920; 1881, A., 757.  
relation between the moisture of the soil and the germination of (BRIEM), 1882, A., 641.  
germination of (PETERMANN), 1880, A., 177; (VAN DE PUTTE), 1880, A., 730.  
composition of the ash of (BODENBENDER and ILLÉE), 1880, A., 496.  
**Birch**, mineral constituents of (v. SCHROEDER), 1880, A., 343.  
**Birch-sap** (HEHNER), 1877, ii., 212.  
**Blossoms**, influence of smoke on the development of (DA CANTO), 1880, A., 177.  
**Box-trees**, use of, in agriculture (PIERRE and SERANE), 1882, A., 93.  
**Bran**, amount of nitrogenous matter in (WIGNER), 1878, A., 1016.  
composition of the ashes of (PECKHAM), 1879, A., 961.  
preparation of oxalic acid from (THORN), 1874, 297.  
**Buckwheat**, composition of (LECHARTIER), 1881, A., 1164; 1882, A., 642.  
**Cabbages**, manures for (LAUCHE), 1880, A., 506.  
**Cabbage disease** (ANON.), 1879, A., 820.  
**Candle-nuts**. See *Aleurites triloba*.  
“*Canna elalis sterilis*,” composition of (CARRIÈRE), 1874, 721.  
**Carrot seed**, composition of (PETERMANN), 1879, A., 822.  
**Castor oil plant** (*Ricinus communis*), composition of the leaves of (WAYNE), 1874, 706.  
seeds, proteids from (RITTHAUSEN), 1879, A., 390; 1882, A., 876.  
**Cereals**, fertilisation of (v. LIEBENBERG), 1881, A., 633.  
quantity of water necessary for (SORAUER), 1882, A., 1312.  
constituents of (O’SULLIVAN), 1882, T., 24.

PLANTS—

- Cereals**, fat of, constitution of (KÖNIG, KIESOW and ARONHEIM), 1874, 597.  
 nitrogen compounds in (WIGNER), 1878, A., 1014; 1879, A., 486.  
 crystallisable sugar in germinating (KÜHNEMANN), 1875, 779.  
 composition of the ash of (MORITZ and HARTLEY), 1882, A., 1313.  
 See also Grain.
- Chestnut tree**, influence of the chemical composition of the soil on the growth of the (FLICHE and GRANDEAU), 1875, 97.  
 disease of the (ANON.), 1879, A., 821.
- Clover**, effect of gypsum on the quantity and quality of (PASQUALINI), 1880, A., 185.  
 perishing of, in winter (BREYMANN; BRITNIK-UHA), 1882, A., 518.  
 permanent pasture a substitute for (GODEFROY and DUDOUY; GENAY), 1880, A., 499.  
 red, composition of (WEISKE), 1880, A., 499.  
 seed production of (HABERLANDT), 1880, A., 729.  
 seed, relation of the colour of, to its value (HABERLANDT), 1880, A., 134; 1881, A., 837.
- Clover sickness** (EMMERLING and WAGNER), 1880, A., 505; (LINDE), 1881, A., 755.
- Cock's-foot grass** (*Dactylis glomerata*), cultivation of, in Saxony (NOBBE), 1882, A., 422.
- Cocoanuts**, composition of (NALLINO), 1873, 87.  
 milk and fatty kernel of (HAMMERBACHER), 1876, i., 735.
- Coffee plant**, constituents of the ash of various parts of the (LUDWIG), 1873, 525.
- Corn**, most advantageous method of sowing (HABERLANDT), 1880, A., 181.  
 oiling of (PIERRE), 1879, A., 822.  
 Turkey, alkaloid found in damaged (BRUGNATELLI and ZENONI), 1877, i., 323.
- Cow tree** (*Brosimum Galactodendron*), composition of the milk of the (BOUSSINGAULT), 1879, A., 73.
- Cress**, formation of starch in the cotyledons of (BÖHM), 1876, i., 952.

PLANTS—

- Cress**, manuring of, with dicalcium phosphate on soils free from humus (ALBERT and SIEGFRIED), 1881, A., 462.
- Crops**, cultivation of various agricultural (SAMEK), 1881, A., 1069.  
 influence of the distance between the seed sown on the growth and quality of (WOLLNY), 1882, A., 646.  
 effect of manure on (CHRISTIANI), 1879, A., 826.  
 rotation of (VOELCKER), 1880, A., 185; 1881, A., 639; 1882, A., 1225.  
 rotation of, in kitchen gardens (ANON.), 1881, A., 1069.  
 quantity of nitrogen which must be supplied to cultivate plants to ensure their normal development as (THAER), 1879, A., 663.
- Cucurbitaceæ** of Uruguay (SACC), 1882, A., 884.
- Cupressinæ**, change of colour in certain, during winter (M'NAB), 1874, 493.
- Curcas bean**, cake from the (RENOUARD and CORENWINDER), 1882, A., 85.
- Dandelion**, composition of (STORER and LEWIS), 1879, A., 821.
- Darnel** and lucerne as a mixture for meadows (WITTMANN), 1881, A., 1065.
- Dhurra** or sorgho grass, cultivation of (V. MOSER), 1879, A., 823.
- Djugara**, a new kind of corn (ANON.), 1881, A., 1065.
- Drosera**, nutrition of (REGEL), 1880, A., 820.
- Duck-weed** (*Lemna trisulca*), composition of (MAYER), 1882, A., 422.
- Earth-nut**. See Ground-nut.
- Elm** (*Ulmus campestris*), composition of (CHURCH), 1877, ii., 211.
- Eriodendron anfractuosum* (Kapok tree), composition, nutritive, and manurial values of the seeds of (REINDERS), 1877, i., 105.
- Eucalyptus**, composition of the ash of the wood of the two varieties of (SMITH), 1880, T., 416.  
 See also Main Index.
- Evergreens**, action of frost on (MOLL), 1882, A., 549.
- Fagus sylvatica*. See Beech.
- Ficus elastica*, examination of (SACC), 1882, A., 989.
- Filix mas*, composition of the roots of (KRUSE), 1877, i., 336.

PLANTS—

- Fir**, mineral constituents of (v. SCHROEDER), 1880, A., 343.  
**Fir seedlings**, experiments on the chemistry of (DULK), 1875, 1280.  
**Fir seeds**, germination of (NOBBE), 1881, A., 931.  
**Flax**, successful growth of, in Saxony (OEHME), 1881, A., 60.  
 retting of (SESTINI), 1875, 1061.  
 formation of starch in the cotyledons of (BÖHM), 1876, i., 952.  
**Flax seed capsules and stems**, ash analyses of (THOMS), 1880, A., 343.  
**Flax seeds**, effect of frost on (HABERLANDT), 1878, A., 802.  
**Fodder-plants**, native, of New South Wales (DIXON), 1881, A., 1067.  
 leguminous, proportions of nitrogen, ash, and phosphoric acid in successive cuttings of (ROUSSILLE), 1882, A., 649.  
**Forest trees**. See Trees.  
**Fruit trees**. See Trees.  
**Fungus**, distribution of (REICHARDT), 1879, A., 479.  
 power of certain substances to prevent the development of (CALVERT), 1873, 405.  
 See also Mould-fungi and Mushrooms.  
**Furze**, cultivation of (SCHIRMER-NEUHAUS), 1881, A., 116.  
*Galeopsis Tetrahit*, composition of the ash of (THOMS), 1880, A., 343.  
**Goose foot**, white, composition of (STORER and LEWIS), 1879, A., 821.  
**Gourds**, occurrence of aspartic acid and tyrosine in the young shoots of (SCHULZE and BARBIERI), 1878, A., 663.  
 analyses of some species of (STORER and LEWIS), 1879, A., 961.  
**Gourd seeds**, chemical processes in the germination of (LIASKOWSKI), 1875, 180.  
 proteids of (BARBIERI), 1879, A., 272.  
**Grain**, sprouted, to what extent is, capable of further germination? (EHRHARDT), 1882, A., 987.  
 methods of analysing (PILLITZ), 1873, 1061.  
 estimation of the value of (WOLLNY), 1880, A., 594.  
 estimation of chlorine in (NOLTE), 1880, A., 285.  
 See also Cereals and Main Index.  
**Graminaceæ**, absence of leucine in the products of germination of the (MERCADANTE), 1877, i., 105.

PLANTS—

- Graminaceæ**, woody fibre of the (STUTZER), 1875, 1045; 1876, i., 421.  
 See also Grasses.  
**Grapes**, influence of atmospheric electricity on the growth of (MACAGNO), 1881, A., 931.  
 ripening of (POLLACCI), 1873, 402; 1880, A., 352; (HILGER), 1875, 281; (SAINTPIERRE and MAGNIEN), 1878, A., 445; (HAAS), 1879, A., 174; (PORTELE), 1879, A., 1047; 1880, A., 178, 336.  
 influence of light on the ripening of (LEVI), 1881, A., 930; 1882, A., 419.  
 composition of, at different stages of ripeness (PORRO), 1879, A., 820.  
 removed from the vine, ripening of (POLLACCI), 1878, A., 595.  
 composition of must at different stages of ripeness of (ANON.), 1876, i., 812; (ROTONDI and GALIMBERTI), 1880, A., 425.  
 picking of (WEIGELT), 1880, A., 517.  
 mashing of (MACH and PORTELE), 1881, A., 126.  
 wine-producing yeast-germs not formed in (PASTEUR), 1873, 82.  
 composition of various parts of (MACH and PORTELE), 1881, A., 1061.  
 self-preservation of, in spirit (MISAGHI), 1876, i., 957.  
 of the Leisten and Stein districts, composition of (HILGER), 1879, A., 739.  
**Riesling**, mineral constituents of (HILGER), 1880, A., 342.  
 from the Roman Province, composition of (SESTINI and DEL TORRE), 1875, 791, 1279.  
 colouring matter of (ANDRÉE), 1880, A., 927.  
 succinic acid in unripe (BRUNNER and BRANDENBURG), 1876, ii., 400.  
 sugar in (MACH), 1878, A., 130.  
 quantities of acid and sugar in, cut at various stages of their growth (WAGNER and ROHN), 1880, A., 179.  
 See also Vines.  
**Grass**, young, nitrogenous constituents of (KELLNER), 1879, A., 819.  
 nutritive value of, at various stages of growth (v. WOLFF), 1880, A., 329.



PLANTS—

- Grass**, potassium salts as manure for (ANON.), 1881, A., 842.  
mowing of (WOLLNY), 1880, A., 498.  
newly mown, loss which it suffers when exposed to rain (EMMERLING), 1881, A., 455.
- Grass seeds**, cultivation of (OTTO; KNOCH), 1879, A., 824.  
influence of light on the germination of (NOBBE), 1882, A., 882.  
amount of oil in, and its relation to their germination (BREIHOlz), 1880, A., 342.
- Grasses**, silica in (WILSON), 1877, i., 336.  
of meadows and pastures, relation of (SPEER), 1880, A., 498.  
American, composition of (RICHARDSON), 1882, A., 762.  
See also Graminaeae.
- Ground-nut** (*Arachis hypogaea*; *earth-nut*; *pea-nut*), composition of the ash of (BROWN), 1877, i., 225.  
composition of the fruit of (CORENWINDER), 1874, 88.
- Hay**, nitrogenous constituents of (KELLNER), 1879, A., 819.  
grown on hills and meadows, composition of (v. MOSER), 1882, A., 766.  
grown under the influence of different manures, composition of (KÖNIG), 1882, A., 1127.  
spontaneous combustion of (RANKE), 1874, 99, 707; (BUCHNER), 1874, 186.  
preparation of quinic acid from (LOEW), 1879, A., 952; 1880, A., 173.  
brown-, preparation of, from maize (GERLAND), 1879, A., 960.  
clover-, action of rain on (BRIMMER), 1879, A., 823.  
meadow-, of the Roman Campagna (SESTINI, MARRO and MISANI), 1875, 1046.  
nature of fat of (KÖNIG; KÖNIG and KIESOW), 1873, 648; (KÖNIG, KIESOW and ARONHEIM), 1874, 597.  
Norwegian, analyses of (DIRCKS), 1880, A., 916.
- Hemp**, strength of (HABERLANDT), 1879, A., 859.  
steeping (RENOUARD), 1881, A., 132.  
essential oil of (VALENTE), 1881, A., 284.

PLANTS—

- Hemp seed**, composition of crystallised albumin from (RITTHAUSEN), 1882, A., 876.
- Hops**. See Main Index.
- Horse-radish**, mineral constituents of (HILGER), 1878, A., 1000; 1879, A., 819.
- Hyacinths**, experiments on the growth of (VAN ROJEN and KRELAGE), 1880, A., 58, 922.
- Lactuca sativa*, composition of (CHURCH), 1877, ii., 210.
- Lallemantia iberica*, seeds of (WILDT), 1879, A., 822.
- Larches**, effect of manures on the growth of (HESS; HAMPEL), 1880, A., 509.
- Leguminosæ**, cultivation and manuring of (WEIN), 1881, A., 938.  
growth of (POTT), 1880, A., 567.
- Lemna trisulca* (*duck-weed*), composition of (MAYER), 1882, A., 422.
- Lemon trees**, composition of the ash of the leaves and fruit of (COSSA), 1873, 402.  
stopping the gum exudation of (ANON.), 1879, A., 821.  
comparison of diseased and sound (RICCIARDI), 1881, A., 300.
- Lentil vetch**, culture of (v. RODICZKY), 1880, A., 500.
- Linseed**, chemical composition of (LADUREAU), 1881, A., 116, 753.
- Lucerne** and darnel as a mixture for meadows (WITTMANN), 1881, A., 1065.
- Lupine**, yellow, cultivation of (WEIN), 1880, A., 736; 1881, A., 299.  
constituents of the seed of (LUDWIG), 1873, 650.
- Lupines**, cultivation of (MEIER), 1882, A., 649.  
purification of (WILDT), 1880, A., 820; (KELLNER), 1880, A., 935; 1881, A., 838.  
alkaloids in (SCHULZ and WILDT), 1880, A., 57; (SCHULZ), 1880, A., 416; (BAUMERT), 1881, A., 831; 1882, A., 229, 873.  
formation of sulphuric acid in (SCHULZE), 1877, i., 104.  
composition of aleurone grains of (VINES), 1880, A., 483; 1881, A., 1062.
- Lupine seeds**, germination of (SCHULZE, UMLAUFT, and URICH), 1877, i., 104.
- Lupine shoots**, asparagine in (SCHULZE and UMLAUFT), 1875, 1284.

PLANTS—

- Maize**, cultivation of (DEHÉRAIN), 1881, A., 455.  
cultivation and preservation of (v. MOSER), 1879, A., 960.  
vegetation of, commenced in an atmosphere free from carbonic anhydride (BOUSSINGAULT), 1877, i., 224.  
composition of (GRANDEAU), 1880, A., 183; (WEISKE), 1880, A., 499.  
amount of sugar in (GOESSMANN), 1880, A., 594.  
sugar from the stems of (COLLIER), 1880, A., 834; 1881, A., 634.  
germinating, presence of a vibriole in, and in the stalk of the plant (MARCANO), 1882, A., 1311.  
uredo of, chemical characters of, and on some questions of vegetable analysis (v. HARTSEN), 1874, 494.  
stripping (v. OPPENAU), 1881, A., 837.  
preparation of brown-hay from (GERLAND), 1879, A., 960.  
See also Main Index.
- Mangels**, influence of size on the composition of (LAWES), 1875, 1047.  
nitrogenous constituents of (SCHULZE and URICH), 1876, i., 419; 1878, A., 84.  
manuring experiments with (POGGE), 1881, A., 61.
- Melons**, amount of sugar in (GOESSMANN), 1880, A., 594.
- Millet**, composition of the ashes of (PAVESI and ROTONDI), 1875, 178.  
composition of the seeds of (RITTHAUSEN), 1878, A., 240.
- Mistletoe** (*Viscum album*), chemical examination of (GRANDEAU and BOUTON), 1877, ii., 211, 636.
- Mulberry tree**, disease of the (ANON.), 1879, A., 821.
- Mushrooms**, composition of edible (v. LÖSECKE), 1877, i., 338.  
nature of the mineral substances assimilated by (CAILLETET), 1876, ii., 323.  
See also Fungus.
- Nasturtium officinale*. See Watercress.
- Nettle**, composition of (STORER and LEWIS), 1879, A., 821.
- Oak trees**, influence of soil on the constituents of (FLEISCHER), 1880, A., 920.

PLANTS—

- Oatmeal**, its value and composition as a food-stuff (DUJARDIN-BEAUMETZ and HARDY), 1874, 912.  
estimation of barley in (PATTINSON and STEAD), 1877, i., 348.
- Oats**, composition of (GRANDEAU and LECLERC), 1881, A., 116.  
cultivation of (DEHÉRAIN), 1881, A., 455.  
development of (DEHÉRAIN and NANTIER), 1880, A., 336; (DEHÉRAIN and MEYER), 1882, A., 418.  
water-culture of (v. WOLFF), 1874, 1003.  
manuring of (JENSSEN), 1880, A., 136; (BRENNING), 1880, A., 508; (MEYER), 1880, A., 738; (GAUDICH), 1881, A., 1077.  
manuring of, on fen lands (CARSTEN), 1880, A., 185.  
manured with steamed and dissolved bones (EMMERLING), 1882, A., 333.  
nitrogen manure for (HEIDEN), 1880, A., 741.  
effect of various quantities of phosphoric acid on (v. WOLFF), 1874, 385.  
manuring of, with saltpetre, (CHANCELLOR), 1881, A., 938.  
examination of (v. MOSER), 1882, A., 647.
- Oil-producing plants**, vegetation of (MAQUENNE), 1881, A., 60.
- Olives**, ripening of (ROUSSILLE), 1878, A., 596.  
formation of fatty matter and ripening of (FUNARO), 1880, A., 568.  
wax and buttery substance from the epicarp of (MINGIOLI), 1882, A., 765.  
proper time for pressing (BECHI), 1879, A., 1080.
- Orange**, composition of the (ANON.), 1879, A., 1049.  
composition of the ashes of the trunk, leaves and fruit of (RICCIARDI), 1880, A., 915.
- Oxalis Acetosella*, vegetation of, in a soil free from potash (MERCADANTE), 1876, i., 96.
- Papilionaceæ**, ligneous, chemical examination of (FLICHE and GRANDEAU), 1880, A., 735.
- Parsnips**, composition of (CORENWINDER and CONTAMINE), 1880, A., 342.

PLANTS—

- Pasture**, permanent, field experiments on (VOELCKER), 1875, 98.  
a substitute for clover (CODEFROY and DUDOUY; GENAY), 1880, A., 499.
- Peas**, influence of coloured light on the assimilation of organic and mineral matters by (WEBER), 1875, 1211.  
chemical changes in the germination of (KELLNER), 1875, 777.  
germinating, formation of asparagine in, and estimation of nitrogenous bodies in (SACHSSE and KORMANN), 1874, 1001.  
damage to seeds of, by weevils (MAREK), 1880, A., 734; (WOLLNY), 1880, A., 919.
- Phanerogams**, chlorophyll in the epidermis of foliage of (STÖHR), 1880, A., 910.
- Phaseolus multiflorus*. See Scarlet runner.
- Pine-leaves**, examination of, at different stages of their growth (DULK), 1875, 1282.
- Pines**, effect of manures on the growth of (HESS; HAMPEL), 1880, A., 509.
- Pink**, garden-, ash of the (ANDREASCH), 1879, A., 338.
- Pinus Pinaster*, influence of the chemical composition of the soil on the growth of (FLICHE and GRANDDEAU), 1874, 382.
- Plantain**, composition of (STORER and LEWIS), 1879, A., 821.  
composition of the seeds of (KROCKER), 1881, A., 1066.
- Poa pratensis*, cultivation of, in Saxony (NOBBE), 1882, A., 423.
- Poppy**, respiration in the ripening fruits of (SABANIN and LIASKOWSKI), 1878, A., 333.  
See also Main Index.
- Posidonia oceanica*, composition of (SESTINI), 1875, 184.
- Potamogetons** capable of precipitating calcium carbonate (WIBEL and ZACHARIAS), 1873, 765.
- Portulaca**, composition of (STORER and LEWIS), 1879, A., 821.
- Potato blossom**, influence of, on the amount of produce (ANON.), 1880, A., 502.
- Potato plant**, influence exerted on the growth of, by allowing the "sets" to decay before planting (KRAUS), 1881, A., 456.

PLANTS—

- Potatoes**, experiments with (JACOBS), 1881, A., 932.  
cultivation of (DRECHSLER), 1879, A., 823; (WAGNER and ROHN), 1880, A., 919; (HEINE), 1881, A., 301; (DEHÉRAIN), 1881, A., 455; (KRIEWITZ), 1882, A., 83; (SCHMEHL), 1882, A., 550; (NITZKOWSKI), 1882, A., 766; (SCHÖNEMANN), 1882, A., 990.  
effect of the moisture in soils on the yield of (BIRNER), 1881, A., 1066.  
cultivation of, and the feeding value of various sorts (SCHMEHL), 1882, A., 550.  
growth of sprouts on (KRAUS), 1881, A., 60.  
internal growth of (LEBL), 1882, A., 641.  
influence of heat on the growth of (BRIEM), 1881, A., 633.  
manuring of (PÄTOW), 1881, A., 61; (FITTBÖGEN), 1881, A., 305; (TOPPENTHAL; TIEDE), 1881, A., 1078; (WILDT), 1882, A., 93; (KOCH), 1882, A., 1130.  
action of different manures on the yield of (PAULSEN), 1880, A., 187.  
best mode of applying artificial manures to (MÄRCKER), 1880, A., 824.  
effect of alkali salts on the growth of (PAGNOUL), 1875, 908.  
bone-meal as a manure for (MEYER), 1880, A., 739.  
injurious effect of kainite and superphosphate on the germination of (FLEISCHER), 1881, A., 300.  
manuring of, with peat, nitrophosphate, and sodium nitrate (W. H.), 1881, A., 642.  
effect of potassium salts on the growth of (HUNTER), 1873, 1255.  
manuring of, with potassium sodium nitrate (HEINE; DRECHSLER), 1882, A., 771.  
composition of (GILBERT and LAWES), 1878, A., 999; (KÖNIG), 1880, A., 734.  
composition of growing (KELLERMANN), 1879, A., 174.  
changes effected by frost on the composition of (BIRNER), 1882, A., 1227.  
frozen and rotten, chemical changes in (CZUBATA), 1880, A., 820.  
change of composition of, during disease (JELLET), 1877, i., 732.

PLANTS—

- Potatoes**, inorganic constituents of sound and diseased (HANNAY), 1873, 930.  
 nitrogenous constituents of (SCHULZE and EUGSTER), 1882, A., 885.  
 proteids and amides in (SCHULZE and BARBIERI), 1878, A., 329; (HOLDEFLEISS), 1880, A., 568.  
 estimation of asparagine in (SCHULZE and BARBIERI), 1878, A., 330.  
 globulin-substances in (ZÖLLER), 1880, A., 723.  
 hypoxanthine in (SCHULZE), 1882, A., 1125.  
 leucine and tyrosine in (SCHULZE and BARBIERI), 1880, A., 342.  
 detection of solanine in (ANON.), 1874, 297.  
 relation between the starch, phosphoric acid, and mineral constituents of (PELLET), 1880, A., 912.  
 relation between the quantity of starch contained in, and their relative specific gravity (HEIDEPRIEM), 1877, ii., 233; (FRESSENIUS), 1881, A., 932.  
 loss of starch occasioned by the sprouting of (KRAMER), 1882, A., 242.  
 estimation of starch in (SIEWERT), 1880, A., 512; (BEHREND, MÄCKER and MÖRGEN), 1880, A., 513.  
 influence of manure on the starch in (MÄCKER), 1880, A., 915.  
 new use for (BOECK), 1882, A., 1340.  
 Chunnos, from Pern (MEISE), 1881, A., 932.  
 sweet (ENDEMANN and PROCHAZKA), 1880, A., 915.  
 dry and wet rot in (REINKE and BERTHOLD), 1880, A., 416.  
 prevention of rot in (ROHL and VOM HESS), 1881, A., 1066.  
 diseased, utilisation of (ANON.), 1881, A., 1066.  
 influence of manure on disease in (MÄCKER), 1880, A., 915.  
 ash of diseased (WILSON), 1874, 90.  
**Pumpkin**, certain sorts of (HARZ), 1880, A., 184.  
 occurrence of an amide of glutamic acid in the young plants of the (SCHULZE and BARBIERI), 1877, ii., 324; 1881, A., 313.  
 leucine from (SCHULZE and BARBIERI), 1878, A., 857.

PLANTS—

- Pumpkin**, analyses of (STORER and LEWIS), 1879, A., 961.  
**Pumpkin seeds**, crystallisable albumin from (GRÜBLER), 1881, A., 625; (RITTHAUSEN), 1882, A., 877.  
 fowls poisoned by (HILLE), 1879, A., 1046.  
 influence of light on the formation of decomposition products of albuminoid substances in the germination of (SABANIN and LIASKOWSKI), 1876, i., 415.  
**Pumpkin sprouts**, decomposition of proteids in (SCHULZE and BARBIERI), 1880, A., 180.  
**Radishes**, formation of starch in the cotyledons of (BÖHM), 1876, i., 952.  
**Rape**, respiration in the ripening fruits of (SABANIN and LIASKOWSKI), 1878, A., 333.  
 perishing of, in winter (BREYMAN; BRITNIK-UHA), 1882, A., 548.  
 sowing broadcast or in drills (PÄTOW), 1880, A., 922.  
**Raspberries**, wild and cultivated (REICHARDT), 1880, A., 936.  
**Rice**, oil from the embryo of (PAVESI and ROTONDI), 1875, 178.  
 husks, adulteration of rye bran with (KÖNIG), 1880, A., 200.  
**Rose**, garden-, ash of the (ANDREASCH), 1879, A., 338.  
*Rumex Acetosa* and *R. Acetosella*, vegetation of, in a soil free from potash (MERCADANTE), 1876, i., 96.  
**Rye**, fertilization of (RIMPAU), 1880, A., 493.  
 manuring of (THAER), 1880, A., 508; (MEYER), 1880, A., 738.  
 ripening of (MÜNTZ), 1879, A., 337.  
 Russian, the relation between nitrogen and phosphoric acid in (BUBNOW), 1878, A., 908.  
 as a material for pressed yeast (DELBÄCK), 1880, A., 777.  
**Rye bran**, adulteration of, with rice husks (KÖNIG), 1880, A., 200.  
**Rye grain**, presence of stearic acid in (RITTHAUSEN), 1878, A., 239.  
**Sainfoin**, cultivation of (DEHÉRAIN), 1881, A., 456.  
**Sand vetch**; a new fodder plant (KÜHN), 1881, A., 1065.  
**Scarletrunner** (*Phaseolus multiflorus*), function of lime in the germination of (BÖHM), 1875, 1284.  
 absorption of lime salts and water by the leaves of (BÖHM), 1877, ii., 209, 350.



PLANTS—

- Scarlet runner** (*Phaseolus multiflorus*), formation of starch in chlorophyll-grains of the, in absence of light (BÖHM), 1878, A., 84; 1879, A., 551.
- Shave grass**, composition of (STORER and LEWIS), 1879, A., 956.
- Shrubs and trees**, effect of coal gas on (ANON.), 1873, 401, 647.
- Soja bean**, cultivation of (HARZ), 1881, A., 116; (WEIN), 1881, A., 938; (STAHEL), 1882, A., 549. cultivation of the rough-haired (HABERLANDT), 1878, A., 87. a sugar present in the grain of (LEVALLOIS), 1880, A., 796; 1881, A., 1121.
- Sorghum saccharatum* (v. WACHTEL), 1880, A., 932. cultivation of (v. MOSER), 1879, A., 823.
- Sorghum vulgare*, cultivation of (v. MOSER), 1879, A., 823. composition of the ash of (STORER and LEWIS), 1879, A., 956.
- Sorghum**, composition of the seeds of two varieties of (COSSA), 1873, 402.
- Spice seeds**, composition of the ash of (EDZARDI), 1880, A., 915.
- Sterculia acuminata* (kola nuts), composition of (HECKEL and SCHLAGDENHAUFFEN), 1882, A., 1125.
- Strawberry roots**, substances obtained from (PHIPSON), 1878, A., 981.
- Sunflower** (*Helianthus annuus*), examination of (WITTSTEIN), 1877, i., 487. oleo-resin of the (CHARDON), 1874, 176.
- Swedes**. See Turnips.
- Tea**. See Main Index.
- Timothy grass** at different periods of growth, composition of (JORDAN), 1882, A., 1127.
- Tobacco**, composition and culture of (JOHNSON), 1874, 286. manured, combustibility of (CANTONI; MAYER), 1880, A., 417. See also Main Index.
- Trees**, light, shade, and soil studied in their influence on the growth of (GURNAUD), 1880, A., 566. dicotyledonous, calcium carbonate in (MOLISCH), 1882, A., 82, 887. quantity and distribution of water in (GELEZNOW), 1880, A., 912. influence of coal gas on the growth of (ANON.), 1873, 401, 647; (SPÄTH and MEYER), 1874, 86; (BÖHM), 1874, 597.

PLANTS—

- Trees**, sap of, and specific gravity of their wood (NOERDLINGER), 1880, A., 912. forest, amount of nitrogen in (v. SCHROEDER), 1880, A., 506. influence of soil on the growth of (GURNAUD), 1880, A., 566. of the Upper Harz, injurious effect of furnace gases on the (REUSS), 1881, A., 1064, 1179. composition of the seeds of some (JAHNE), 1882, A., 643. fruit, pathology of (EßERMAYER), 1878, A., 163. effect of pruning the tops and roots of, on their development (MAGERSTEIN and BILEK), 1882, A., 1224. manuring of (LAUCHE), 1880, A., 506; (ANON.), 1881, A., 121; (SORAUER), 1881, A., 936; (NOACK), 1882, A., 93.
- Tree seedlings**, experiments on (DULK), 1875, 1279.
- Triticum sativum*, composition of (CHURCH), 1877, ii., 211.
- Turnips** (PHILIPPART), 1881, A., 756. composition of two varieties of (JANEČEK), 1880, A., 917. influence of soluble and insoluble phosphates as manure for (JAMIESON), 1880, A., 186; (PREVOST), 1882, A., 91; (VOELCKER), 1882, A., 1228. application of various phosphates as manure for (KIMBER; PREVOST), 1882, A., 91. phosphatic manures on; a report of experiments carried out in Scotland in 1880 (BROWN), 1882, A., 653.
- Twigs**, green, elimination of oxygen from (BÖHM), 1878, A., 162.
- Ulmus campestris* (elm), composition of (CHURCH), 1877, ii., 211.
- Vegetable matter**, permeation of, by water (RIEGLER), 1880, A., 823.
- Vegetables**, nutritive value of (DAHLEN), 1876, ii., 648. comparative nutritive value of, and of gluten biscuit (BOUSSINGAULT), 1876, i., 765. and milk, ratio of alkalis and proteids in (BUNGE), 1875, 475. absorption of free nitrogen by the proximate principles of, under the influence of atmospheric electricity (BERTHELOT), 1877, i., 222.

PLANTS—

**Vegetables**, existence of ammonia in (PELLET), 1880, A., 568.  
 copper in (DUPRÉ; MUTER; PIESSE), 1877, ii., 511.  
 chemical composition of the parenchyma of certain (MAUDET), 1874, 184.  
 and the peptone forming ferment of (V. GORUP-BESANEZ), 1876, i., 738.  
 modification of starch in (MERCADANTE), 1877, i., 104.  
 composition of preserved (ATFIELD), 1877, ii., 952.  
 green, substitution of chlorophyll for copper salts in the preservation of (GUILLEMARE), 1878, A., 188.  
 estimation of manganese in (LECLERC), 1873, 193.  
**Vetch**, common, growth of the (POTT), 1880, A., 567.  
 wild, composition of the (BAESSLER), 1882, A., 883.  
 formation of asparagine during the germination of the (v. GORUP-BESANEZ), 1874, 494, 912.  
 body resembling asparagine in (RITTHAUSEN), 1874, 701.  
 leucine existing in (v. GORUP-BESANEZ), 1874, 494, 912; (COSSA), 1876, i., 421.  
**Vetch-seeds**, occurrence in, of a diastatic ferment which produces peptones (v. GORUP-BESANEZ), 1875, 1286; 1876, ii., 321.  
*Vicia villosa*, cultivation of (ECKERT), 1882, A., 647.  
**Vines**, raising of, from seed (BLANKENHORN), 1880, A., 418.  
 manuring of (WAGNER and PRINZ), 1881, A., 121; (STUTZER), 1882, A., 889; (WAGNER and STÜNKEL), 1882, A., 1129.  
 action of sunlight on (MACAGNO), 1878, A., 162.  
 function of chlorophyll in (BRIOSI), 1877, i., 732.  
 pressure of the sap in (NEUBAUER), 1873, 293.  
 researches on the bleeding of (ROTONDI; GHIZZONI), 1880, A., 133.  
 ash of different parts of (ROTONDI), 1880, A., 133.  
 ash of the wood of differently manured (NESSLER), 1873, 1253.  
 leaves of, functions of (MACAGNO), 1878, A., 90.  
 constituents of (NEUBAUER), 1873, 933.

PLANTS—

**Vines**, leaves of, sugar contained in (PETIT), 1874, 244.  
 roots of, comparative analysis of (BOUTIN), 1877, i., 226.  
 enemies of (BOUCHARD), 1882, A., 328.  
 disease of (ANON.), 1879, A., 821.  
 mode of action of sulphur as a remedy against (MORITZ), 1880, A., 281.  
 action of the volcanic earth of the Solfatara of Puzzuoli on (DE LUCA), 1873, 523; 1874, 184.  
 attacked by phylloxera, composition of (BOUTIN), 1875, 101, 183.  
 saccharine matter contained in, suffering from the phylloxera (GAYON and MILLARDET), 1879, A., 1049.  
 diseased, composition of leaves of (ROTONDI and GALIMBERTI), 1880, A., 416.  
 phylloxera (MAYET), 1881, A., 1069; 1882, A., 82; (COSTE), 1882, A., 646; (HENNEGUY), 1882, A., 888.  
**Water-cress** (*Nasturtium officinale*) (v. HOFMANN), 1874, 793; (CHURCH), 1877, ii., 210.  
**Water-plants**, respiration and fermentation of (BÖHM), 1875, 1285.  
**Weeds**, influence of manures on (HEINRICH), 1873, 934.  
 used as salad, composition of (STORER and LEWIS), 1879, A., 821.  
**Wheat**, continuous growth of, at Woburn in 1881 (VOELCKER), 1882, A., 1226.  
 manuring of (THAER), 1880, A., 508; (MEYER), 1880, A., 738; (GENAY), 1880, A., 922.  
 influence of an abundant nitrogenous and phosphatic manuring on the composition of spring (RITTHAUSEN and POTT), 1874, 183.  
 manuring of, with saltpetre (CHANCELLOR), 1881, A., 938.  
 continuous cropping with (VOELCKER), 1881, A., 638; 1882, A., 329.  
 effect of heat on the germination of (KRAŠAN), 1874, 597.  
 course of respiration in germinating (MAYER), 1876, i., 416.  
 new English kinds of (HEINE), 1881, A., 1065.  
 effect of coating, with oil (PIERRE), 1877, ii., 954.  
 oiled, detection of (HIMLY), 1880, A., 929.

PLANTS—

**Wheat**, perishing of, in winter (BREY-MANN; BRITNIK-UHA), 1882, A., 548.

amount of nitrogenous matter in (WIGNER), 1878, A., 1015.

Russian, the relation between nitrogen and phosphoric acid in (BUBNOW), 1878, A., 908.

disease (ANON.), 1879, A., 820.

bunt in, sulphurous acid as a remedy for (ZOEHL), 1880, A., 572.

composition of the ashes of (MEUNIER), 1881, A., 754; (CAVAZZI), 1882, A., 548.

**Wheat-bran**, composition of the ash of (PECKHAM), 1879, A., 961.

**Flour** rendered uneatable by free fatty acid (BERNECK), 1882, A., 123.

method for rapidly incinerating (BORNTÄGER), 1879, A., 282.

adulteration of (FISCHER), 1880, A., 422.

examination of (v. WASOWICZ), 1878, A., 348.

PLANTS—

**Flour**, microscopic examination of (STEENBUCH), 1882, A., 559.

detection of foreign mineral substances in (VOHL), 1877, i., 753.

detection and estimation of alum in (DUPRÉ), 1874, 916; 1878, A., 915; 1879, A., 483; (CLEAVER), 1874, 1101; (THRESH), 1876, i., 109; (WANKLYN), 1877, i., 231;

(BELL), 1877, ii., 510; (YOUNG), 1877, ii., 510; 1879, A., 483;

(WELBORN), 1878, A., 1009; (STODART), 1879, A., 483;

(PENNEY), 1879, A., 556.

detection of blighted wheat in, by the spectroscope (PETRI), 1879, A., 977.

estimation of gluten in (BÉNARD and GIRARDIN), 1881, A., 1177.

**Willow**, white (*Salix alba*), composition of (PETERMANN), 1882, A., 988.

**Willows**, cultivation of (KRAHE), 1882, A., 888.

**Yam tubers**, composition of (v. MOSER), 1877, ii., 795.

SOILS.

**SOILS** (SCHLÆSING), 1875, 179; (KNOP), 1875, 905.

formation of, by weathering (HAZARD), 1880, A., 449.

formation of, importance of the silicates of the shell limestone in the (WEISE), 1878, A., 447.

contributions of volcanic rocks to the formation and fertility of (BOUSSINGAULT), 1875, 98.

physical properties of, in a close or open condition (WOLLNY), 1882, A., 1128.

effect of artificial manures on the physical condition of (WOLLNY), 1882, A., 1227.

warmth in (v. LIEBENBERG), 1881, A., 1071.

temperature of (WOLLNY), 1879, A., 824.

temperature of, under snow (E. and H. BECQUEREL), 1881, A., 934.

influence of superficial drying on the temperature and moisture of (WOLLNY), 1881, A., 934.

influence of trenching on the temperature and moisture of (WOLLNY), 1881, A., 60.

**SOILS**, heat capacity of (LANG), 1879, A., 958.

heat conductivity of (v. LITTRÖW), 1875, 1150.

cohesive power of (HABERLANDT), 1879, A., 957.

permeability of, for air (RENK), 1880, A., 821; (AMMON), 1881, A., 302.

mode of optically demonstrating the permeability of, for air (SOYKA), 1882, A., 89.

permeation of water through (SEELHEIM), 1881, A., 303; (AUDOYNAUD and CHAUZIT), 1881, A., 1071; 1882, A., 88.

silicatisation of (BREITENLOHNER), 1878, A., 456.

determination of the chemical peculiarities of, and manures requisite for them (v. KOETIG), 1880, A., 418.

Grandeau's theory of the fertility of (TUXEN), 1881, A., 1166.

contributions of volcanic rocks to the fertility of (BOUSSINGAULT), 1875, 98.

effect of manures on the subsequent condition of (WARINGTON), 1874, 287.

SOILS, increase of fertility of, by gypsum (COSSA), 1873, 1202.  
 influence of gypsum solution on (KALMANN and BÖCKER), 1878, A., 803.  
 action of soluble and reduced phosphates on (v. KOETII), 1880, A., 418.  
 behaviour of various phosphates in (HOFFMEISTER), 1882, A., 550.  
 worthlessness of phosphates as manure for certain (DEHÉRAIN and MEYER), 1881, A., 61.  
 importance of phosphoric acid to (TRUCHOT), 1876, i., 729.  
 behaviour of phosphoric acid in (JOLIE), 1880, A., 571.  
 exhaustion of, by sodium nitrate (EMMERLING and LOGES), 1882, A., 330.  
 impoverishment of, by removal of straw (HANAMANN), 1882, A., 991.  
 effects of cropping upon the subsequent condition of (WARINGTON), 1874, 184.  
 effects of the growth of plants on the amount of matter removed from, by rain (PREVOST), 1881, T., 475.  
 influence of fallowing on (WOLLNY), 1880, A., 736.  
 ridge cultivation of (WOLLNY), 1879, A., 822.  
 absorptive power of (STREHL), 1874, 598; (FREY), 1875, 1279; (PILLITZ), 1876, i., 727; (DURRWELL), 1876, ii., 114; (VAN BEMMELEN), 1878, A., 598; 1879, A., 339, 552; (ULLIK), 1879, A., 667; (FESCA), 1882, A., 991.  
 rich in humus, absorptive capacity of (KÖNIG), 1882, A., 889.  
 absorptive power of, method of ascertaining (MAYER), 1881, A., 637; (ZALOMANOFF), 1881, A., 935.  
 practical method for determining the filtering and absorbing power of different, for purposes of liquid manuring (LISSAUER), 1876, i., 728.  
 absorptive power of, for bases (ARMSBY), 1877, ii., 913; 1878, A., 913.  
 absorptive power of, for gases (AMMON), 1880, A., 134.  
 influence of sodium nitrate on the absorption of potash by (FIEDLER), 1881, A., 457.  
 absorption of salts by (TUXEN), 1881, A., 1165.  
 absorption of inorganic salts by (TUXEN), 1881, A., 1165.

SOILS, composition of (STREHL), 1874, 598.  
 constancy and variation in the composition of (ORTH), 1879, A., 666.  
 composition of, from a graveyard (REICHARDT), 1880, A., 920.  
 composition of, from the bunter sandstone formation (WEBER), 1880, A., 281.  
 deposited by the water employed for washing sugar-beet, composition of (ANON.), 1882, A., 1315.  
 composition of air in (FORSTER), 1876, ii., 213.  
 method of determining the mineral strength of, by means of water culture (HIGHT), 1877, i., 156.  
 carbonic anhydride in (EBERMAYER), 1878, A., 1001; (MOELLER), 1880, A., 505.  
 influence exerted by the physical properties of, on the amount of free carbonic anhydride contained therein (WOLLNY), 1882, A., 86.  
 influence of shade on the amount of carbonic anhydride in the air of (WOLLNY), 1880, A., 823.  
 gases in (v. FODOR), 1876, ii., 57.  
 value of humus in (PITSCH), 1881, A., 117, 839.  
 removal of iron from newly-broken (PÄTZ), 1881, A., 638.  
 double compounds of the organic matter of, with mineral substances (SIMON), 1876, i., 732.  
 phosphoric acid in (CORENWINDER and CONTAMINE), 1877, ii., 913; (DEHÉRAIN), 1882, A., 86; (LADUREAU), 1882, A., 767.  
 form of combination in which phosphoric acid exists in (KOSTITSCHIEFF), 1881, A., 457; (DEHÉRAIN and KAYSER), 1881, A., 934.  
 phosphates in, solubility of, by acids contained in the roots of plants (v. LIEBIG), 1882, A., 334.  
 distribution of salts in (PELLET), 1878, A., 804.  
 amount of water and formation of clefts, etc. in (WOLLNY), 1882, A., 1128.  
 behaviour of, towards water (HAVENSTEIN), 1880, A., 737.  
 evaporation of water in (HABERLANDT), 1879, A., 667; (MASURE), 1882, A., 87.  
 influence of, on the decomposition of organic substances (SOYKA), 1879, A., 339.



SOILS, effect of sewers on the purity of (WOLFFHÜGEL), 1877, i., 240.  
 action of sea-water on (REINDERS), 1877, i., 106.  
 influence of factory waste-water and gases on (KÖNIG), 1880, A., 497; 1882, A., 331.  
**Soil**, occurrence of "fairy-rings" in (GILBERT), 1876, i., 433.  
 loam and clay, difference between (ANON.), 1880, A., 823.  
 forest-land, changes effected by cultivation of (HANAMANN), 1882, A., 1129.  
 meadow, lucerne and darnel as a mixture for (WITTMANN), 1881, A., 1065.  
 effect of artificial manures on (BOCHMANN and DÖRING), 1879, A., 828.  
 system of irrigating, by means of rain-water, where the soil is either mountainous or impermeable (LE PLAY), 1876, i., 730.  
 agricultural experiments on irrigated (ULLIK), 1879, A., 825.  
 injurious effect of peat water on (KLIEN), 1880, A., 738.  
 moorland, cultivation of (FRANK), 1875, 1279.  
 peat-moor (REICHARDT), 1882, A., 644.  
 peaty (v. SCHWARZ), 1880, A., 182.  
 sandy, manuring of, with artificial manures (ANON.), 1881, A., 304.  
 comparative experiments on the manurial values of soluble, reduced, and precipitated phosphates on (K. and W. C. MÜLLER), 1881, A., 758.  
 of tea plantations in Cachar, composition of (HODGES), 1875, 181.  
 of Indian tea plantations, composition of (BROWN), 1875, 1222.  
 turf, nitrogen in (v. SIVERS), 1880, A., 344.  
 of vine growing districts of the Rhine and Maine, composition of (HILGER), 1879, A., 737.  
 of vineyards, action of, on sulphuretted and alkaline solutions (CAUVY), 1875, 284.  
 volcanic, fertility of (TRUCHOT), 1878, A., 604.  
 phosphoric acid in (RICCIARDI), 1882, A., 550, 650.  
 ancient, organic matter found in (HUSSON), 1876, ii., 495.  
 arable, of Auvergne (TRUCHOT), 1876, i., 729.  
 of Berneck (KNOP), 1879, A., 443, 824.

SOILS—

**Soil**, from the primeval forest of Brazil, composition of (LUDWIG), 1873, 483.  
 from Burmah, composition of (ROMANTS), 1881, A., 838.  
 Danish, application of Knop's method to (TUXEN), 1882, A., 244.  
 calcareous, of the south-east of France, use of superphosphates on (DE GASPARI), 1882, A., 1130.  
 of Japan (KINCH), 1880, A., 133.  
 of Mississippi silt, analysis of (HILGARD), 1874, 1104.  
 of Munich, carbon dioxide in the air of, at different depths and at different times (v. PETTENKOFER), 1873, 361; 1874, 36.  
 Queensland, composition of (LIVERSIDGE), 1881, T., 61.  
 Roumanian, mechanical and chemical analyses of (RADIANT), 1881, A., 935.  
 from Russia (SCHMIDT), 1881, A., 456, 1070.  
 Westphalian (KÖNIG), 1882, A., 767.  
**Nitrification, nitrogen and nitrogenous compounds** (SCHLÆSING and MÜNTZ), 1877, ii., 215; 1878, A., 163, 597; 1880, A., 277; (WARINGTON), 1878, T., 44; 1879, T., 429; (DAVY), 1879, A., 1047; 1880, A., 279.  
 fermentation theory of (STORER), 1878, A., 932; 1880, A., 909.  
 of vegetable earth (BOUSSINGAULT), 1873, 725.  
 possibility of, without seedling (WARINGTON), 1879, T., 452.  
 influence of light on (WARINGTON), 1878, T., 49; 1879, T., 431.  
 influence of temperature on (WARINGTON), 1879, T., 436.  
 influence of cane-sugar and tartrates on (WARINGTON), 1879, T., 433.  
 prevention of, by carbon disulphide (WARINGTON), 1878, T., 48.  
 influence of chloroform in preventing (WARINGTON), 1878, T., 46, 49; (SCHLÆSING and MÜNTZ), 1878, A., 163; (HEHNER), 1879, A., 395.  
 prevention of, by heat (SCHLÆSING and MÜNTZ), 1878, A., 163.  
 of an ammonium salt (WARINGTON), 1878, T., 50.  
 of nitrites (WARINGTON), 1879, T., 452.  
 of nitrogenous organic substances in manures, influence of soil on (BOUSSINGAULT), 1877, i., 735.

SOILS—

**Nitrification, nitrogen and nitrogenous compounds**, exchanges of ammonia between soil, air, and water (SCHLÆSING), 1873, 419; 1876, i., 95, 518; ii., 44, 172, 319.

absorption of ammonia by soil (ORTH), 1880, A., 737.

absorption of ammonium-nitrogen by soil and subsoils (ORTH), 1878, A., 1002.

nitrites in soil, formation of (SCHLÆSING), 1873, 1198; (REICHARDT, HÜNEFELD, and HERTZ), 1880, A., 59.

influence of heat and moisture in reducing (WARINGTON), 1882, T., 354.

formation of nitrites in soil (GRETE), 1879, A., 737.

assimilation of atmospheric nitrogen by soils (SCHLÆSING), 1876, ii., 320.

action of soil on organic nitrogen (STANFORD), 1874, 938.

**Nitrifying organism**, alterations in the properties of, by cultivation

SOILS—

(WARINGTON), 1882, A., 79 1223.

**Soils, analysis of** (HILGARD), 1873, 298; 1874, 1103; (FESCA), 1879, A., 673; (FARSKY), 1882, A., 245.

influence of strength of acid and time of digestion in the extraction of soils (LOUGHRIDGE), 1874, 1105.

analysis of, distribution of ingredients among the sediments obtained in the (LOUGHRIDGE), 1874, 1104.

estimation of carbon in (WARINGTON and PEAKE), 1880, T., 617.

estimation of clay in arable (SCHLÆSING), 1874, 1010.

physico-chemical analysis of clay (SESTINI), 1880, A., 511.

estimation of manganese in (LECLERC), 1873, 193.

estimation of nitrogen in (PELLET), 1877, i., 227.

estimation of nitric acid in (WARINGTON), 1882, T., 351.

WATER.

WATER—

**Rainfall**, daily (AUGUSTIN), 1882, A., 1227.

in Germany, the highest daily (ZIEGLER), 1882, A., 87.

influence of forests on (FAUTRAT; MATTHIEU), 1880, A., 737.

**Water**, exposed, evaporation of (MASURE), 1882, A., 87.

action of, in the process of irrigation (KÖNIG), 1881, A., 638.

irrigating, and its action, alteration in the composition of (KÖNIG and KRAUCH), 1882, A., 655.

irrigation, estimation of carbonic acid in (HOUEAU), 1876, ii., 426.

filtered through dry soil, calcium carbonate in (STORER and LEWIS), 1880, A., 59.

industrial effluent, injurious effect of, on soils and plants (KÖNIG), 1880, A., 497; 1882, A., 331.

**Drainage waters**, composition of (VOELCKER), 1874, 707.

collected at Rothamsted (LAWES, GILBERT and WARINGTON), 1882, A., 889.

WATER—

**Drainage waters**, from land unmannered and uncropped (MILLS), 1878, T., 67.

from moorland (SCHILLER), 1881, A., 117.

**Peat-water**, injurious effect of, on meadows (KLIEN), 1880, A., 738.

**Rain water** collected at Rothamsted (LAWES, GILBERT and WARINGTON), 1882, A., 889.

descent of, down tree-stems (RIEGLER), 1881, A., 61.

passage of, through the soil (AUDOYNAUD and CHAUZIT), 1881, A., 1071; 1882, A., 88.

system of irrigating meadows by means of, where the soil is either mountainous or impermeable (LE PLAY), 1876, i., 730.

**River water**, loss of plant nutrients through (ANON.), 1877, ii., 213.

of the Isère and Durance, value of, for agricultural purposes (DE GASPARIN), 1882, A., 92.

irrigation with (KÖNIG), 1878, A., 447.

MANURES AND MANURING EXPERIMENTS.

MANURES, various (V. MOSER), 1880, A., 344; (SIEGFRIED; H. G.; PERRET), 1882, A., 92.  
 of Japan (KINCH), 1880, A., 133.  
 application of natural products as (ULLIK), 1880, A., 417.  
 composition of various (VOELCKER), 1873, 766; 1874, 706; 1876, i., 956; 1877, ii., 637; 1880, A., 678; (FLEISCHER), 1881, A., 640.  
 composition of various minerals used as (VOELCKER), 1876, i., 200.  
 ammonia-fixing power of certain salts in (MORGEN), 1882, A., 651.  
 influence of soil on the nitrification of nitrogenous organic substances in (BOUSSINGAULT), 1877, i., 735.  
 effect of, on the subsequent condition of the land (WARINGTON), 1874, 287.  
 effect of, on the alkaloidal yield of cinchonas (BROUGHTON), 1873, 523.  
 action of, on the composition of must (ROTONDI and GALIMBERTI), 1880, A., 507.  
 effect of various, on different species of plants (MASTERS and GILBERT), 1873, 522.  
 effect of, on crops (CHRISTIANI), 1879, A., 826.  
 effect of, on the growth of larches and pines (HESS; HAMPEL), 1880, A., 509.  
 influence of, on the combustibility of tobacco (CANTONI; MAYER), 1880, A., 417.  
 influence of, on weeds (HEINRICH), 1873, 934.  
 animal, cultivation without (SCHINDLER), 1882, A., 1314.  
 artificial (HEINRICH), 1879, A., 1050; (DÜNKELBERG), 1881, A., 304.  
 effects of, on the physical condition of soils (WOLLNY), 1882, A., 1227.  
 solubility of materials used in (MORGEN), 1881, A., 120.  
 report on Coignet's process for the preparation of substances of animal origin intended for the manufacture of (HERVÉ-MANGON), 1874, 300.  
 effect of, on the growth of barley and meadow land (BOCHMANN and DÖRING), 1879, A., 823.

MANURES—

**Ammonium sulphate** as manure (HEIDEN), 1879, A., 739.  
**"Azotin"** (PELLET), 1882, A., 769.  
**Beet-sugar refuse** as manure (V. WOLFF), 1880, A., 742.  
**Blood**, disinfection and preservation of, for agricultural purposes (VAUTELET), 1880, A., 929.  
**Bone-meals** of various degrees of fineness, manuring experiments with (FARSKÝ), 1882, A., 653.  
 Norwegian, fermentation of (PAGEL), 1878, A., 163.  
 action of steam on (KÖNIG), 1879, A., 987.  
 adulteration of (KROCKER), 1880, A., 354.  
 adulteration of, with phosphorite (V. WACHTEL), 1880, A., 516.  
**Box-trees**, use of, in agriculture (PIERRE and SERANE), 1882, A., 93.  
**Carnallite** as a manure and fixer of ammonia (FITTEGEN), 1882, A., 1130.  
**Chili saltpetre**. See Sodium nitrate.  
**Composts**, composition of materials adapted for (PETERMANN), 1882, A., 1229.  
**Excreta**, human, utilisation of (SCHWARZ), 1876, ii., 343.  
**Farmyard manure** from deep stalls (EMMERLING and LOGES), 1882, A., 992.  
 preservation of, in deep stalls (TESDORFF; HOLDEFLEISS; EMMERLING), 1882, A., 333.  
 researches on the changes occurring in, when kept (BIRNER and BRIMMER), 1881, A., 937.  
 testing the progress of putrefaction in (MEDICUS), 1881, A., 937.  
 money value of (LECOUTEUX), 1881, A., 1076.  
**Ginse** (residue in the preparation of sulphur), use of, in agriculture (SESTINI), 1876, i., 879.  
**Guano**, African, composition of (PETERMANN), 1881, A., 758.  
 from Curaçao (HULWA), 1881, A., 61.  
 from the Island of Ichaboe (NIEDERSTADT), 1880, A., 506.  
 deposit of Mejillones, phosphates and borophosphates of magnesium and lime in (DOMEYKO), 1880, A., 446.

MANURES—

- Guano** deposit in the South of Peru (SEYFFART), 1875, 1047.  
 Peruvian, composition of new (VOELCKER), 1875, 98.  
     phosphoric acid in (AVERDAM), 1882, A., 1316.  
 bats' (SCHWARZ; SESTINI), 1876, i., 730; (VOELCKER), 1878, A., 741; 1880, A., 345.  
 Norwegian fish, utilisation of (KELLNER), 1878, A., 240.  
     fermentation of (PAGEL), 1878, A., 163.  
 Fray-bentos (ANON.), 1876, i., 957.  
 phosphatic (VOELCKER), 1877, i., 733.  
 steamed, free from fat (VOHL), 1876, i., 135.  
 substance used for the adulteration of (JEAN), 1876, i., 98.  
 occurrence of avic acid in (CHEVREUL), 1873, 1052; 1874, 90; 1875, 100.  
 preparation of uric acid from (REICHARDT), 1876, i., 379.  
**Guanos**, composition of (BAUDRIMONT), 1873, 609; (VOELCKER), 1873, 766; 1877, ii., 637; 1880, A., 678; (ANDERSON), 1873, 1257.  
**Gypsum** as manure (NANQUETTE), 1881, A., 1076; (KÖNIG), 1882, A., 1316.  
**Hair**, conversion of, into manure (RISSMÜLLER and WIESINGER), 1879, A., 859.  
**Kainite**, manuring with (H. G.), 1882, A., 92.  
     manuring fen lands with (MÄCKER), 1882, A., 771.  
**Lake mud** as manure (ANON.), 1881, A., 1077.  
**Lavas**, fertilising action of (GAVAZZI), 1877, ii., 861.  
**Leather meal**, agricultural value of (PETERMANN), 1882, A., 331.  
**Leaves** as manures (EERMAYER), 1875, 1277; (DULK), 1875, 1282.  
     amount of nitrogen in the under litter of (V. SCHROEDER), 1880, A., 506.  
**Litter**, peat as (ARNOLD), 1882, A., 333.  
     ground wood as (ANON.), 1881, A., 1077.  
**Lupine seeds** as manure (SELM), 1880, A., 507.  
**Maize residues** of distilleries as manure (PORION and MEHAY), 1882, A., 672.

MANURES—

- "Manure-meal,"** preparation of (ANON.), 1882, A., 93.  
**Manure salts**, Stassfurt, composition of (FARSKÝ), 1882, A., 1229.  
**Marl**, composition of (KÖNIG), 1880, A., 60; 1882, A., 551.  
**Marsh earth** as manure (ANON.), 1881, A., 1077.  
**Mill waste** for manure (FRIEDEBURG), 1880, A., 60.  
**Molasses waste**, preparation of, as manure (ANON.), 1881, A., 937.  
     preservation of (ERNST), 1882, A., 651.  
**Mud**, composition of (KÖNIG), 1882, A., 550.  
**Nile mud**, composition of (KNOP), 1874, 672.  
**Nitrogenous manures**, danger of the exclusive use of (ROUSSILLE), 1876, i., 731.  
     influence of, on the yield of alkaloids in certain plants (V. JOBST), 1877, ii., 213.  
**Osmose water**, manuring with (BRIEM), 1882, A., 993.  
     potassium chloride in (STEINREICH), 1882, A., 115.  
**Osteolite** as a manure (SIEGFRIED), 1882, A., 92.  
**Peat**, composition and use of (KÖNIG; DEICHMANN), 1882, A., 769.  
     and manures prepared with it (ALBERTI), 1882, A., 244.  
     use of, as manure (NERLINGER), 1880, A., 506.  
**Phosphates** as manures (WEIN), 1881, A., 120; (KROCKER and GRAHL), 1881, A., 1167; 1882, A., 770; (JAMIESON), 1882, A., 653; (WALTER), 1882, A., 770.  
     manuring with, in the Département du Nord (LADUREAU), 1882, A., 1228.  
     behaviour of, in the soil (HOFFMEISTER), 1882, A., 550.  
     process for enriching (L'HÔTE), 1879, A., 490.  
     average composition of commercial (VOELCKER), 1876, i., 202.  
     assimilation of fossil, and on the danger of the exclusive use of nitrogenous manures (ROUSSILLE), 1876, i., 731.  
     natural, and their value in agriculture (HANAMANN), 1880, A., 506.  
     natural, manurial effects of (GUILAUME), 1882, A., 993.  
     precipitated, manuring with (LÖRBECKE), 1882, A., 1229.



MANURES—

- Phosphates**, precipitated and soluble, determination of the relative values of (EMMERLING), 1881, A., 309.  
 precipitated, soluble and reduced, comparative experiments on the manurial values of, on sandy soils (K. and W. C. MÜLLER), 1881, A., 758.  
 reduced and insoluble, agricultural value of (PETERMANN), 1880, A., 571.  
 reduced and soluble, action of, on soils (v. KOETH), 1880, A., 418.  
 soluble and insoluble, comparative value of (VOELCKER), 1880, A., 678; 1881, A., 640; (MÄRCKER), 1881, A., 1073; (ANON.), 1882, A., 90.  
 manuring experiments with (VOELCKER), 1882, A., 1315.  
 Aberdeenshire experiments on the relative value of (JAMIESON), 1882, A., 653.  
 soluble, manufacture of (KNIGHT), 1873, 414.  
 researches on, for use in agriculture (MILLOT), 1874, 913.  
 reduction of, in superphosphate (SHEPARD), 1874, 92.  
**Phosphoric acid**, agricultural value of various forms of (FITZBOGEN), 1881, A., 1072; (KROCKER and GRAHL), 1881, A., 1167; 1882, A., 770; (WILDT), 1882, A., 1228.  
 importance of, in respect to fertility (TRUCHOT), 1876, i., 729.  
 behaviour of, in soils (JOULIE), 1880, A., 571.  
 reduced, contribution to the knowledge of (MEYER), 1880, A., 574.  
 reduced and soluble, comparative value of, in superphosphates (MÄRCKER), 1882, A., 91.  
 retrograde (ANON.), 1880, A., 739; (MILLOT), 1881, A., 62.  
 soluble, in "citrate" solution, manuring experiments to determine the value of (v. WOLFF), 1881, A., 1075.  
**Phosphorite** as a manure (SIEGFRIED), 1882, A., 92.  
 preparation of (VORSTER), 1880, A., 356.  
 Belgian (PETERMANN), 1880, A., 198.  
 Norwegian (PETERMANN), 1880, A., 356.  
 See also Main Index.

MANURES—

- Pigeon's dung** (WEIN), 1881, A., 121.  
**Pond slime**, composition of (HOLDEFLEISS), 1881, A., 61.  
**Potassium salts** as manure (v. MOSER), 1879, A., 826; (MAYER), 1881, A., 459, 840; (MÄRCKER), 1881, A., 839; 1882, A., 1130; (FARSKÝ), 1881, A., 1072; 1882, A., 770.  
**Potassium nitrate**, manuring with (LÖBBECKE), 1882, A., 1229.  
**Potassium sodium nitrate** (DRECHSLER), 1880, A., 507.  
**Poudrette**, value of (SOXHLET), 1882, A., 651.  
**Rags**, conversion of, into manure (RISSMÜLLER and WIESINGER), 1879, A., 859.  
**Saltpetre**. See Potassium nitrate.  
**Sea mud** as manure (KÖNIG), 1882, A., 551; (ANON.), 1882, A., 770.  
**Sea-weed and marsh-weeds** as manure (SESTINI), 1882, A., 652.  
**Sewage matter**, manurial value of, obtained by Liernur's system (GINTL), 1875, 1048.  
**Sewage**, experiments with (MARIÉ-DAVY), 1881, A., 936.  
 irrigation with (MÜLLER), 1878, A., 164; 1881, A., 842; (SMITH), 1880, A., 767.  
 of towns, purification of, by irrigation (ANON.), 1878, A., 742.  
 application of, to vegetation (GRANTHAM; MCGOWAN), 1874, 100; (MÜLLER), 1875, 1278; 1878, A., 164; (LADUREAU), 1882, A., 248.  
**Sheep-dung**, value and composition of (LECOUTEUX), 1882, A., 1315.  
**Shells** of crabs, oysters, mussels, etc., as manure (STORER and HENSHAW), 1880, A., 60.  
**Slag**, basic, composition of (MÄRCKER), 1882, A., 1229.  
**Sodium nitrate** (*Chili saltpetre*), manuring with (v. SCHWERIN-PUTZAR), 1880, A., 507.  
**Stable manure**. See Farmyard manure.  
**Superphosphates**, chemistry of (ERLENMEYER), 1882, A., 141.  
 manufacture of, for agricultural purposes (MILLOT), 1876, ii., 122.  
 action of sulphuric acid on phosphates, in connection with the manufacture of (POST), 1880, A., 425.  
 apparatus for making (THIBAUT), 1875, 1302.

MANURES—

**Superphosphates**, manufacture of, from pure tricalcium phosphate (WEIN), 1880, A., 141.  
composition of (DE GASPARIN), 1882, A., 1315.  
their adulteration and valuation (REYNOLDS), 1873, 530.  
estimation of the value of (ALBERT and SIEGFRIED), 1879, A., 967.  
influence of the physical condition of, on its value (WAGNER), 1880, A., 60.  
comparative value of reduced and soluble phosphoric acid in (MÄCKER), 1882, A., 91.  
extraction of the so-called soluble phosphoric acid from (ERLENMEYER), 1877, i., 759.  
insoluble, phosphoric acid in (MILLOT), 1879, A., 1052.  
retrogradation of (JOULIE), 1879, A., 987; 1880, A., 511.  
reduction of soluble phosphate in (SHEPARD), 1874, 92.  
containing iron and aluminium, retrogradation of (MEYER), 1880, A., 703.  
manuring with (v. SCHWERIN-PUTZAR), 1880, A., 507; (LÖBBECKE), 1882, A., 1229.  
bone-meal, manuring with (WEIN), 1879, A., 959.  
coarse and fine-grained (FARSKÝ), 1882, A., 90, 550, 653; (JAMIESON), 1882, A., 653.  
lime, formation of (KOLB), 1874, 657.  
apparatus for recovering the iodine disengaged in the manufacture of (THIBAUT), 1875, 106.

**Volcanic breccia** as manure (CARNOT), 1881, A., 1016.

**Waste products**, utilisation of, as manure (CHURCH), 1873, 1256.

**Waste-water**, treatment of, for manure (AUBREY-VITET), 1882, A., 668.

**Wood-ashes**, percentage of potassium carbonate and phosphoric acid in (NESSLER), 1882, A., 1313.

**Wool waste** as manure (ANON.), 1875, 492; 1881, A., 937; (PETERMANN), 1882, A., 1228.

**MANURING EXPERIMENTS** (VILLE), 1875, 376; (BILEK), 1880, A., 345; (v. BÜLOW), 1880, A., 506; (BOREL, LECLERC and MOREAU), 1880, A., 570; (WAGNER), 1880, A., 922; (NERGER), 1881, A., 1079.

MANURING EXPERIMENTS—

with artificial manures (v. MASSEN-BACH), 1879, A., 958, 1050; (GENAY), 1881, A., 641.  
on arable land (SCHUMACHER), 1881, A., 61.  
on barren sandy heath (MAYER), 1882, A., 654.  
on a farm without stable manure, thirty-eighth year of (STECHER), 1880, A., 741.  
in gardens (LAUCHE and ORTH), 1881, A., 936.  
on meadows (OEMLER and FUCHS), 1875, 180.  
on moorland (WALDNER; STAUBESAND), 1880, A., 923.  
on permanent pasture (VOELCKER), 1875, 98.  
on Donau Moos (SCHAFFERT), 1879, A., 1050; 1881, A., 935.  
at the experimental station at Göttingen (DRECHSLER), 1880, A., 922; 1882, A., 89.  
at Grignon (DEHÉRAIN), 1881, A., 932; 1882, A., 1314.  
at the experimental stations of the Highland Agricultural Society (AITKEN), 1882, A., 767.  
at Königsberg (KLIEN), 1882, A., 1130.  
at Lutter (ANON.), 1881, A., 935.  
with various phosphates at Nancy (GRANDEAU), 1882, A., 993.  
at Oderbruch (STÖCKHARDT), 1873, 87.  
at Woburn (VOELCKER), 1882, A., 649, 1226.

**Manures, analysis of:—**

influence which the sampling of, exercises on their analyses (BARRAL and DUVAL), 1876, i., 780.  
estimation of nitrogen in (WAGNER), 1875, 664.  
estimation of soluble nitrogen in (PELLET), 1882, A., 769.  
estimation of the total nitrogen in (PELLET), 1873, 1161; 1877, i., 227.  
estimation of nitric nitrogen in guano (TATLOCK), 1880, A., 68.  
use of ammonium citrate in examination of phosphates in (WAGNER and HERCHER), 1881, A., 846.  
estimation of insoluble phosphate in (FLEISCHER), 1881, A., 645.  
estimation of reduced or precipitated phosphates in (HERZFELD and FEUERLEIN), 1881, A., 940.  
estimation of precipitated phosphate in (BRUNNER), 1880, A., 576.

**Manures, analysis of—**

- estimation of reverted phosphate in (GLADDING), 1882, A., 1319.
- estimation of phosphoric acid in artificial (MENE), 1873, 942; (CHESTER), 1876, ii., 554; (ANON.), 1878, A., 1007; 1879, A., 1052.
- estimation of phosphoric acid in guanos (GILBERT), 1873, 1160; (SCHUMANN), 1876, ii., 553.
- estimation of phosphoric acid in fish guano (DIETZELL and KRESSNER), 1879, A., 968.
- estimation of retrograde phosphoric acid in (MILLOT), 1881, A., 62; (LLOYD), 1882, T., 306.
- estimation of retrograde phosphoric acid in, as ammonium citrate (KÖNIG), 1880, A., 924; 1881, A., 464.
- suggestions for a uniform method of estimating soluble phosphoric acid in (MÄCKER), 1882, A., 994.

**Manures, analysis of—**

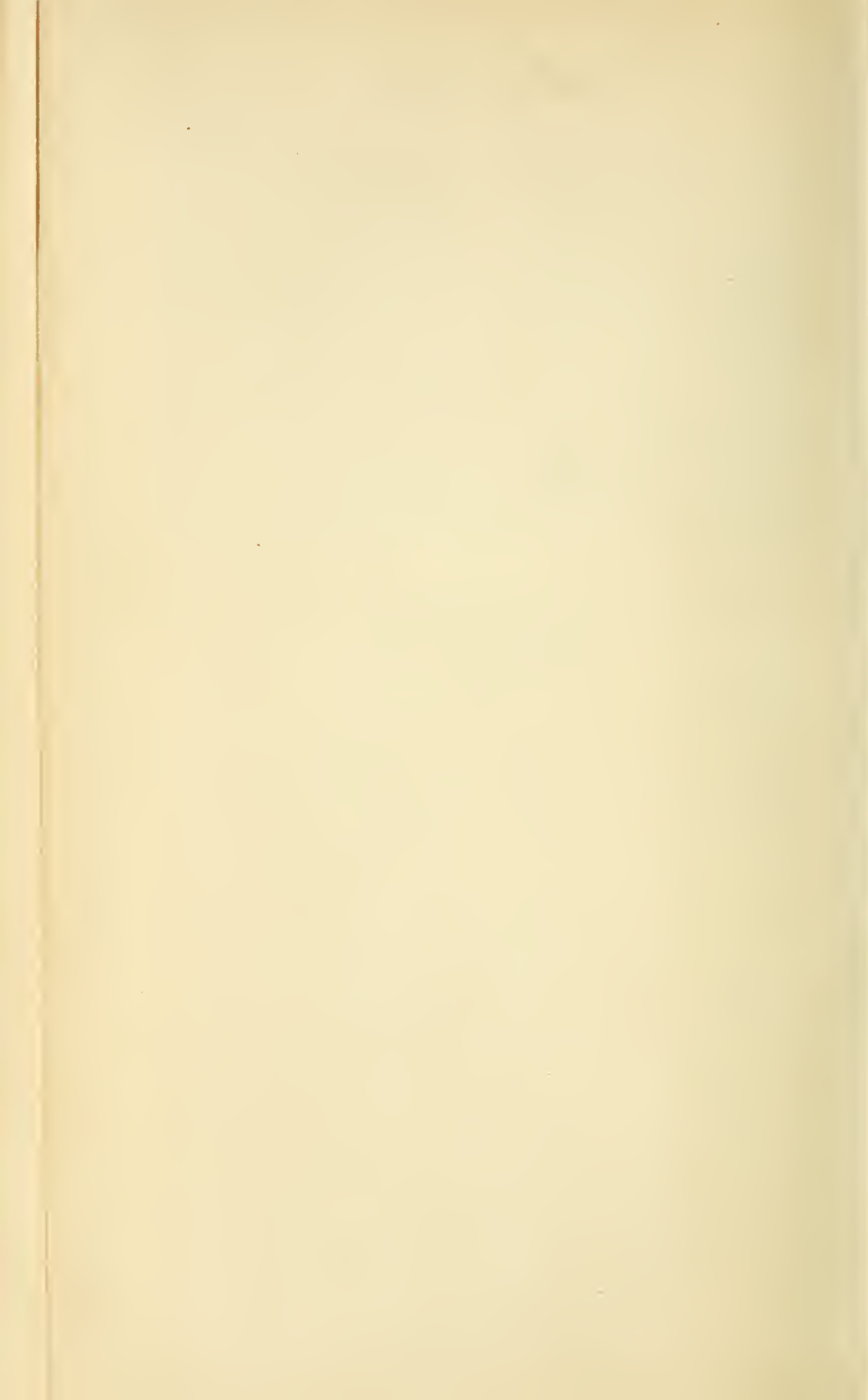
- estimation of potassium in (ANON.), 1878, A., 1007; (ROUSSELOT), 1882, A., 95.
- separation and estimation of soda and potash by the indirect method in plant-ashes and (RICHARDSON), 1882, A., 658.
- superphosphates, analysis of (HENNEBERG), 1874, 710; (KOLB), 1874, 1102; (WEIN, RÖSCH and LEHMANN), 1880, A., 140; (BRUNNER), 1880, A., 576; (ERLENMEYER), 1882, A., 141.
- estimation of soluble phosphoric acid in (WATTENBERG), 1879, A., 672; (WEIN), 1879, A., 745; (DREWSSEN), 1882, A., 465.
- estimation of insoluble phosphoric acid in (MILLOT), 1879, A., 1052.

635

RICHARD CLAY & SONS, LIMITED,  
LONDON & BUNGAY.

9















QD            Chemical Society, London  
1             Journal  
C6  
Index  
1873-82  
cop.4

PLEASE DO NOT REMOVE  
CARDS OR SLIPS FROM THIS POCKET

---

UNIVERSITY OF TORONTO LIBRARY

---

